

VASES.

CAMEOS

Emperors of Rome



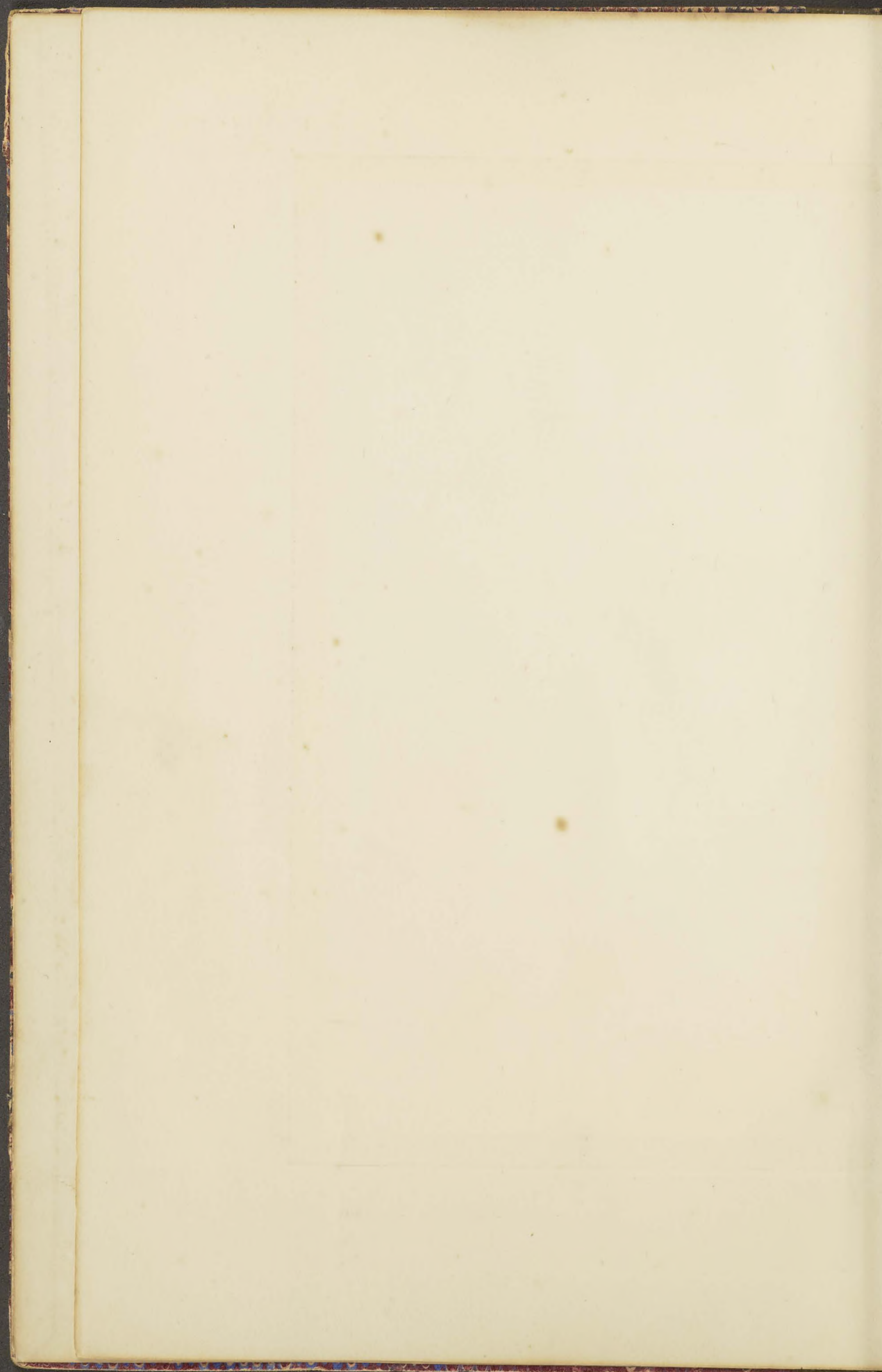
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Some persons have instinctive
taste. It is found by a long &
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ancient work only. In fact
the discernment is indefinable -
A beautiful thing is always
beautiful - whether modern
or antique.

There must be understanding
of design -

Long experience alone can
teach one that intuitive
perception which must for
ever be possessed by every ^{really} great

... 151
... 152
... 152
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collectiv
The ^{ancient} ~~first~~ ^{antique} ~~little~~ ^{all} ~~antique~~ are small
Renaissance pens & last
are of the larger.

~~most~~ all antique ~~compos~~
~~in~~ ~~with~~ ~~groups~~ are
~~mythological~~ but ~~some~~ a
The backs of pens are really
the most safe criterion -
Antiques are often irregular
in shape and at the back.
They are polished often in the
actual ^{surface} surface - & scratched.
Moderns usually have a
flat back.

Antique pens are thicker
than modern ones - but a

VASES.

JOURNAL OF THE SOCIETY OF ARTS

old pen may have had
its black flattened by a
modern jeweller.

Little reliance can be
placed on polish - as it is
easy to slight wear down a
modern pen. & many old
pens have been re-polished.

The microscope is useful
to detect fraudulent scratches
in place of genuine wear
which is simply a dullness.

The Italian renaissance
enraptured our old pen
lovers, & then are almost
impossible to detect.

There is no secret in polishing.

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... .. 152
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The intent of an intaglio - it
can be done just as well
now as then.

Examinati^{on} medals
shows that a few have been
cut by a diamond point.
Halter even said that
this made a test - but the
fact that both he & his left
cut (was) is - thus the
contrary. ^{in the 18th century} they passed amongst
earls for antiques.
common powder & oil
emery.

If there is any lettering on a
gem it will easily show whether it
is wheel or point. Square letters
indicate the wheel - rounded ones the
diamond.

VASES.

JOURNAL OF THE SOCIETY OF ARTS

FRIDAY, JANUARY 25, 1901.

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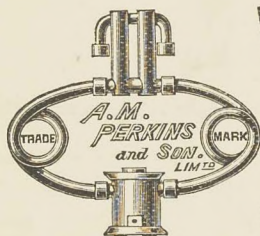
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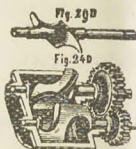
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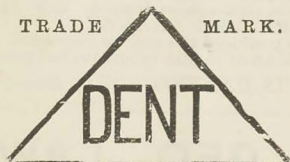
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Journal of the Society of Arts,

No. 2514. Vol. XLIX.

CAMEOS.

By CYRIL DAVENPORT, F.S.A.

The forms of gems if carefully
studied with help is a judgment of
their antiquity - transparent
stones were usually cut into a
~~double convex shape~~ ^{more of them} - having ^{one} ~~one~~ ⁱⁿ ~~in~~ ^{as heads}
~~be mirrors~~
Square gems are talismans.

Round stones often cut
in cabochon -

Flat stones engraved
in the scarab - the
scaraboid.

Opaque stones were
usually cut in planes

es not in any way
derstanding of the
of the word is un-
stand them cameos
bas-reliefs cut upon
because of its rarity,

of the art are per-
scarabs of ancient
the cameo and
are engraved with
also exist in the form
the back of seal
can origin, as also
Glass cameos were
long before the
ll earlier date are
medallions of clay
relief and gilded.
arabæi are usually
steatite, syenite, or
n be cut by flint or
hard metal chisels.
ometimes successfully
und in amethyst,
per. The majority
in moulded glass or
een or blue glaze.

B.C. the peculiar
d onyx for cameo
lised, and it rapidly
erial in which the
d; and cameos in
s of personal adorn-
in proportion as the

ous chalcedony, is
r hollows in trap
ually in successive
tours towards the
e and amorphous.
white in reflected
anslucent, greyish,
liquids. In con-
ity, certain colours
quired by the amor-
y; in cases where
loaded with iron,
bly be found, pro-
sardonyx, from a
meaning yellow: other

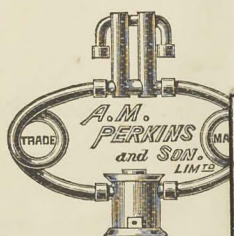
metals will impart other tints.

Pliny (1st century), in his "Natural His-

British Museum, in the chair.

The paper read was—

See
in 9
Birmingham
papers
next
issue
of this
Journal.



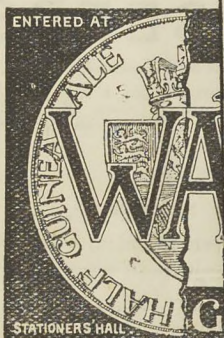
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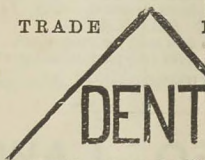
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Journal of the Society of Arts,

No. 2,514. VOL. XLIX.

FRIDAY, JANUARY 25, 1901.

*All communications for the Society should be addressed to the Secretary, John-street, Adelphi, London, W.C.***Notices.****POSTPONEMENT OF MEETINGS.**

In consequence of the national mourning for the death of the Queen, all the meetings of the Society for the next week are postponed.

The following meetings, therefore, will not be held :—

Monday, January 28—Cantor Lecture.

Tuesday, January 29—Meeting of the Section of Applied Art.

Wednesday, January 30—Ordinary Meeting.

For the same reason the following meetings were not held :—

Tuesday, January 22—Meeting of the Colonial Section.

Wednesday, January 23—Ordinary Meeting.

The Council of the Society will meet on Monday next, 28th inst., to consider what immediate action they can take to express the Society's sense of the loss the nation has sustained by the death of a monarch in whose beneficent reign so much progress has been made in the Arts and Manufactures.

CANTOR LECTURES.

Mr. J. LIBERTY TADD delivered the second lecture of his course on "Elementary Art Education," on Monday evening, 21st inst.

The lectures will be published in the *Journal* during the summer recess.

Proceedings of the Society.**APPLIED ART SECTION.**

Tuesday, January 15th, 1901: ALEXANDER STUART MURRAY, LL.D., Keeper of the Department of Greek and Roman Antiquities, British Museum, in the chair.

The paper read was—

CAMEOS.

BY CYRIL DAVENPORT, F.S.A.

The word "Cameo" does not in any way help towards a proper understanding of the term. The real derivation of the word is unknown. As we now understand them cameos may be defined as small bas-reliefs cut upon some substance precious, because of its rarity, beauty, or hardness.

The earliest examples of the art are perhaps to be found in the scarabs of ancient Egypt, combining both the cameo and intaglio, as their bases are engraved with designs. Early instances also exist in the form of small sculptures, on the back of seal stones, of Greek and Etruscan origin, as also rarely in Mycenaean work. Glass cameos were probably made at Rome long before the Christian era, and of still earlier date are found small rosettes and medallions of clay impressed with designs in relief and gilded.

The ancient Egyptian scarabæi are usually made in some soft stone, steatite, syenite, or serpentine, all of which can be cut by flint or obsidian flakes, or even by hard metal chisels. But harder stones were sometimes successfully cut, examples being found in amethyst, carnelian, obsidian, and jasper. The majority appear to have been made in moulded glass or porcelain, usually with a green or blue glaze.

About the 3rd century B.C. the peculiar adaptability of the banded onyx for cameo work was first generally realised, and it rapidly became the favourite material in which the most skilled artists worked; and cameos in time became valued articles of personal adornment, increasing in favour in proportion as the use of seal rings declined.

Onyx, which is a silicious chalcedony, is usually formed in irregular hollows in trap rock, and is deposited gradually in successive layers from the outer contours towards the centre, alternately crystalline and amorphous. The crystalline layers are white in reflected light, the amorphous are translucent, greyish, and curiously permeable by liquids. In consequence of their permeability, certain colours are sometimes naturally acquired by the amorphous layers of chalcedony; in cases where the water of infiltration is loaded with iron, a yellowish-red will probably be found, producing what is called a sardonyx, from a Persian word "zard," meaning yellow: other metals will impart other tints.

Pliny (1st century), in his "Natural His-

See
p. 9
iv. 7
Bismuth
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next
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of this

Journal

tory," among other notes concerning jewels, says that (Book xxxvii.) in his hands are books "wherein it is deciphered how to sophisticate transparent gems," a statement which likely enough refers to artificial colouring of chalcidony. But at the same time it may also only mean the paste imitations which were plentifully made both before and during the time the "Natural History" was written.

It is, I think, probably due to the discovery of the remarkable adaptability of the onyx stone for cameo work, that the art has developed so as to become one of a considerable range, and considerable importance both from the antiquarian and the artistic point of view.

Without this discovery we should not have possessed the Strozzi Augustus of the British Museum, or the Portland Vase, or any of the works like them, bearing designs cut in one coloured layer on a background of another, but we might have had the vase of St. Martin, cut simply in an agate without any reference to the trend of its colour layers, and the Phaleræ in chalcidony or amethyst, or any other stone of one colour. But without the onyx cameos it is likely enough that all the rest would never have been considered more than small and delicate pieces of sculpture, not belonging to a school of their own, so that for the existence of cameos as a distinct branch of art we are probably indebted particularly to that unknown lapidary who first hit upon the idea of cutting the banded onyx parallel to its colour layers instead of across them.

At Oberstein, in Oldenburg, there is a large onyx industry, originally fixed there because the stone was found plentifully in the neighbourhood, but this supply having now become comparatively small, onyxes are sent there in quantities from India, Brazil, or Egypt to be sliced up ready for cutting, shaped and artificially stained with colours as may be desirable.

The staining of onyx is well understood and is now reduced almost to a certainty, so that it is said that any ancient and presumably natural tint can be artificially produced with great accuracy:—

Reds by means of pernitrate of iron.

Black by oil, honey, or sugar.

Blues by iron with ferro-cyanide of potassium (prussian blue).

Greens by nitrate of nickel.

Heat alone will often darken and improve the colour of an onyx.

Sulphuric acid will often improve the colour

of an onyx when metallic oxides already exist within it.

Nitric acid will often pale an onyx.

The white or crystalline layers are seldom meddled with. They can only be slightly reddened superficially by painting with a solution of iron or a little thickened by heat or strong acid.

METHODS.

Early carvings and engravings on hard stone were probably at first cut with a sharp diamond splinter alone; in time the diamond point was only used to sketch out the design on the polished surface of the stone, the actual cutting being afterwards done more easily and expeditiously by means of a hand drill, or some more powerful tool analogous to the modern jeweller's lathe. The harder stones require the help of oil and diamond dust to cut them, the soft iron points which are used becoming thickly coated with microscopic pieces of diamond and when rapidly revolved forming a very powerful cutting surface.

Emery is mentioned by both Theophrastus and Pliny as being the best material for rubbing down stones for engraving, the softer of which were probably sometimes engraved with flint points. Emery will polish a diamond; it is crystallised alumina, and a variety of corundum.

For polishing ordinary stones rotten stone (powdered alumina) or tripoli powder (powdered silica) are most generally used. For polishing of course the material used must be softer than the substance to be polished, and the points used for carrying the polishing powders are also soft, copper, ivory or wood.

PERIODS.

My examples are arranged in three divisions, antique ~~subject or portrait~~ cameos ~~on small~~ ~~on flat stones~~; antique vases and cups on nodules of onyx or cut as cameos on blue or white glass; and the later or Renaissance cameos.

The Greeks were the most successful workers in cameo that have existed, the few remaining specimens of their work done during the early Ptolemaic period (3rd and 4th centuries B.C.) are unsurpassed, and the finest pieces made at Rome from the first century B.C. to the third century A.D., were actually the work of Greek artists. The universal acknowledgment of the surpassing excellence of the Greek workmen is marked in an interesting way by the fact that the extremely skilful Renaissance

See my book p.

Alexandria founded B.C. 331 by Alex. the Great.

cameo cutters nearly all signed their names, if at all, in Greek characters.

Augustus ~~Octavianus~~ ^{first} Caesar, ~~second~~ Emperor of Rome, who reigned during the latter part of the 1st century, B.C., and the first few years of the Christian era, was evidently not only a splendid model for the cameo cutter, but also a man of much learning and culture and a great patron of the arts. He is said to have been the original of Æneas as depicted by Virgil.

During the Roman Empire until the time of Constantine great luxury prevailed, and no doubt the lavish expenditure which was indulged in by the opulent and luxurious collectors of their time, tempted the most skilled of the Greek cameo cutters to migrate to Rome and follow their avocation there more profitably to themselves than they could anywhere else.

Towards the end of the 3rd century the Greek influence began to die out of Roman art in cut gems, and consequently there is a marked decline in the hitherto high standard reached in their production, and in the 4th century when Constantine the Great moved his Court to Byzantium, "Nova Roma" as it was sometimes called, a new style, Christian in feeling, began, and the classical designs hitherto prevalent were changed as to their attributes or superseded by others of new character. Hercules becomes David, Perseus and the Gorgon do duty for David and Goliath, Venus and Leda both become the Virgin Mary, and the heads of Medusa have the snakes cut away and are changed into the Holy face of St. Veronica. Byzantine art in cameos is not remarkably good, it is chiefly noticeable for the skilful manner in which advantage is taken of the natural markings of the bloodstone.

Some ancient portrait and subject cameos are of world-wide celebrity, either because of the exquisite beauty of the art displayed upon them, or for the size and beauty of the stones in which they are cut. The largest of these are both illustrative of scenes in the life of the Emperor Tiberius, who succeeded Augustus; one is at Paris (13 inches by 11 inches) and the other at Vienna (9 inches by 7½ inches). M. Ernest Babelon thinks these may both have been cut by the celebrated engraver of intaglios, Dioscorides. Then there is the beautiful double profile cameo at St. Petersburg known as the "Gonzaga Cameo," representing, perhaps, Ptolemy II. Philadelphus, King of Egypt, and his wife, and another of the same king with his second wife, at Vienna. Adolf Furt-

waengler considers these may be portraits of Alexander the Great and his mother Olympias. They were both most likely made during the early Ptolemaic period.

The large double portrait cameo, formerly in the Marlborough collection and now in the British Museum, is also one of the great cameos of the world; it measures 8¾ inches by 6 inches, and represents an emperor and empress facing each other, in profile, with the attributes of Jupiter Ammon and Isis.

The most beautiful single head in a cameo is probably the portrait of the Emperor Augustus, now in the British Museum, and formerly in the Strozzi collection at Florence. It measures 5 inches by 3¼ inches, and is cut upon a most beautiful sardonyx. Another magnificent single head, a portrait of the Emperor Claudius, measuring 7½ by 5½ inches, but badly broken, is in the Royal collection at Windsor.

Among the Renaissance cameos, as far as I know, there is only one of great celebrity, that is the small marriage group of Eros and Psyche, falsely signed "ΤΡΥΦΩΝ ΕΠΟΙΕΙ," which was formerly in the Marlborough collection, and has now gone to America.

CUPS, VASES, AND DISHES.

Besides the usual form of portrait or subject cameos so well known to us, samples of which you have just seen, there is another class which is important and perhaps not so well known or appreciated as it ought to be. These are the vases, dishes, and cups which are cut as cameos, and made out of nodules of onyx, or of blown and cut glass. There are now but few ancient examples of this development of the art of the cameo cutter left, most of them have succumbed to the destroying influence of time. It is said that when the Roman General Pompey brought back from Egypt the treasure he had captured from Mithridates, King of Pontus (1st century B.C.), there were some two thousand cups of carved hard stone among it. One of these is said to exist in the "Cup of St. Denys," now at Paris, but it appears to me to have the characteristics of later work. The "Tazza Farnese," now at Naples, and formerly in the collection of Lorenzo de Medici, is a flat agate dish (diameter about 8 inches), magnificently cut as a cameo, with figures probably of Egyptian divinities. It is considered to have been made during the early Ptolemaic period, probably at Alexandria. The "Vase of St. Martin," now at St. Maurice d'Agaune, in the Rhone Valley, is an onyx

Marlborough
now, but
Ptolemy II

was a
great
patron and
founder
of literature
the fine
arts.

necklace
of 3rd cent
found in
1809
near site
of Mausoleum
now
slide p. 30. all
Paris

L. von
at Philadelp

Julian
as an
early
factual
latter.

main
specimens

During
the
Ptolemy
as the
triumph
of the
Egyptians

lastest
from cameo
the
known
+ 12.
kit i.
+ 20 fine
either
here.

ΑΙΟΞΕΚΡΙΠΟΥ { Herophilus - Hyllos & Eutyches were all supervisors - the 2 prof
made & inscribed cameos - now at Berlin & Vienna.
+ Furtwaengler considers these both represent Alex. the great & his mother Olympias.

at St. Petersburg is a small sandstone vase 3½ inches in height. Broken - Fig. i Part was
 another at Vienna still smaller - a ornament for
 another at Berlin a thin oval with classical designs.
 & a Caricature at Brunswick of inferior workmanship.

cup, dark, still with its Byzantine setting; it is probably early Byzantine work, or possibly late Roman mounted by Byzantine artists. The small but exquisite chalcedony vase (8½ inches high) recently bequeathed to the British Museum by Baron Ferdinand de Rothschild, belongs to this class. The lip, lid, and foot are of enamelled gold, added probably in the 16th century.)

Besides these, which are all of the first importance, are the remarkable works of the same kind, but executed in glass; the Portland vase, in the British Museum, the Vase des Vendanges at Naples, and the Auldjo vase in the British Museum. The Vase des Vendanges alone is perfect. These are all antique, and as exquisitely worked as if they were made of the most valuable stones. The Portland vase is the finest of them. There are numerous fragments still existing of vases of this kind which have been broken.

These glass vases are indeed glorified "pastes," of which numbers were made during the time of the Roman Empire and just before it. As a rule pastes imitated intaglios and were cast from clay moulds, and there are examples of paste cameos probably made as early as the 2nd century, B.C. These are rarely satisfactory because of the difficulty of persuading the glass for the part in relief to keep to its own ground. In the case of the vases, however, the procedure has been different, the reliefs have not been cast, as Wedgwood reliefs are for instance, and then stuck on, neither have they been cast in one piece with the darker glass of the ground, but the vase has been made in the dark glass first, then dipped in white glass so as to be entirely coated with it. The vase has then been treated exactly as if it was a stone and the cameo cutter has cut the glass in the same manner as he would an onyx. None of these cut glass vases have now a high polish, but it is possible that they originally had, as some of the glass plaques of similar workmanship and about the same date are polished. S. 35. 116. P. 40.

RENAISSANCE.

After the Byzantine period until the Renaissance, *i.e.*, until the 15th century, there is a lack of consecutive art in the direction of cameo-cutting. The Byzantine cameos are not remarkable for beauty in design or execution. They are largely cut in bloodstone, the peculiar coloration of which was peculiarly fitted for representations of the crucifixion.

Christian designs prevailed as a rule until

the end of the 15th century, when the "Renaissance" began, and classical designs in their turn replaced those taken from Biblical sources.

The earliest great patron of cut gems of the Renaissance period was Cardinal Bembo, afterwards Pope Paul II., who made a fine collection. He is said to have so loaded his fingers with rings set with gems that they chilled him to death. His collection was largely acquired by Lorenzo dei Medici, called the Magnificent, who ruled in Florence during the latter half of the 15th century. The revival of the arts which took place in the 15th century is generally considered to have been largely due to the patronage of this great Italian. He had many of his gems engraved with his name. The Medici collection is now dispersed chiefly between the Museums of Naples, Florence, and Paris.

Renaissance cameos are remarkable for the technical skill displayed upon them and the beauty of their settings. Benvenuto Cellini is credited with two settings for cameos now at Paris. Although the general level is high, there are no really great cameos of the Renaissance period. It was indeed a revival of the art only, and does not add anything new to the existing styles. There were innumerable imitations made of antiques, many of them most skilfully. Names of celebrated engravers were frequently added both to inferior antiques and to new gems, but cameos have fortunately not suffered nearly so much from fraudulent imitations as their cousins the intaglios.

From the 16th century to the present time shells have been largely used for small cameos. It is, technically, a different art from the cutting in hard stone, and is executed more after the fashion of a wood-carving, as the shell is comparatively soft.

Queen Elizabeth caused her portrait to be cut in cameo several times; some of these have no doubt been executed by Julien de Fontenay, called "Coldoré."

In later times Italian artists have most notably followed the profession of cameo cutting. Flavio Sirletti, in the 18th century, is said to have nearly reached the Greek perfection of technique. Giovanni Pichler and Sirletti, too, cut some cameos with the diamond point alone as an experiment. Jean Laurent Natter, of Nuremberg, flourished in the same century; he was particularly successful in his imitations of the antique, and in all probability numbers of so-called Græco-Roman gems are really his work.

He made a catalogue of the Bessborough gems, afterwards part of the Marlborough collection, and he also wrote a valuable treatise on the ancient and modern systems of engraving and cutting gems in hard stones.

Alessandro Cesati, called "Il Greco," was noted for his fine draughtsmanship. Madame de Pompadour learnt the art of gem cutting from the French artist, Jacques Guay, who made cameo portraits of her, Louis XVI., Marie Antoinette, and others. Guay could hardly write, and it is supposed that the signatures in his cameos were cut by someone else.

In the 19th century the decline in the popularity of cameos has been marked, indeed, although there are several names of known artists sometimes who have them, that of Benedetto Pistrucci alone has reached a point of eminence. Pistrucci came here from Rome early in the century, and eventually became Chief Engraver to the Royal Mint. He designed the beautiful group of St. George and the Dragon, which is still used on the reverse of some of our coins now in circulation. He wrote an interesting autobiography, in which he tells the story of a head of Flora, cut by himself, which was sold to Mr. Richard Payne-Knight as an antique. Pistrucci showed his mark on the gem, but Mr. Payne-Knight disbelieved the story.

0.40 - 0.50. slides of p. III.

The following is a list of the lantern slides which were shown in illustration of the paper:—

ANTIQUES.

- Egyptian scarab, set in gold ring.
- Greek seal ring of carnelian, with lion in relief.
- Phœnician cameo, cut in shell, of *Tridacna squamosa*.
- Ostrich egg, cut in cameo, by Phœnicians.
- Diagram of section of the onyx stone.
- The "Gemma Augustea," at Vienna.
- The "Agate de Tibere," at Paris.
- The "Gonzaga Cameo," at St. Petersburg.
- Cameo of Ptolemy II., Philadelphus, at Vienna.
- Cameo of Marcus Aurelius and Faustina the Elder, at London.
- Cameo of Julia and Livia as Minerva and Juno.
- The Strozzi Augustus, at the British Museum.
- Portrait of Julia, daughter of Augustus.
- Head of Medusa, cut in amethyst.
- Cameo of Victory, in a quadriga.
- Cameo of a prancing horse, in pink limestone.
- Cameo of a horse in sardonyx.
- Cameo of a Cretan goat in sardonyx.
- Cameo of a satyr in sardonyx.

Two portrait heads in profile, in a gold and enamelled Renaissance setting.

The Marlborough cameo of Augustus, with radiate crown.

Head of Diana, in a gold and enamelled Renaissance setting.

Head of a boy, in high relief, in gold and enamelled Renaissance setting.

Omphale cut in a nicolo, in broad gold Renaissance setting, with diamonds and rubies, given by the Emperor Charles V. to Pope Clement VIII. *XVII century*

Head of Livia, in cream and grey agate.

Minerva, with helmet and Ægis.

Head of a Mænad.

Venus in profile in filagree Renaissance settings with peridots and amethysts.

Roman portrait bust in antique gold setting.

Head of a sphinx in rock-crystal.

Roman necklace with cameo pendants, found near Nasium.

Cameo group set in the lid of a modern horn snuff-box.

Boy seated on a goat, cut in onyx, set in a gold and enamelled snuff-box, given by Pope Pius VI. to Napoleon.

Dancing girl cut in onyx, set in a modern horn snuff-box.

Portrait cameo of emperor and empress set in the lid of a snuff-box of Lumacelli marble, with gold and enamelled borders and set with opals.

VASES, DISHES, AND CUPS.

- The "Tazza Farnese," at Naples.
- The "Coupe des Ptolémées," at Paris.
- The "Vase de Saint Martin," at St. Maurice d'Againe in the Rhone Valley.
- The "Rothschild Vase," in the British Museum. *Req. 1899.*
- The "Vase des Vendanges," at Naples.
- The "Auldjo Vase," at the British Museum.
- The base of the "Portland Vase," probably intended for Paris.
- The "Portland Vase," at the British Museum.

RENAISSANCE CAMEOS.

- The Entry into the Ark, cut in fine onyx—formerly in the collection of Lorenzo de' Medici, with his name on the doors of the ark.
- The Hymeneal Procession of Eros and Psyche, falsely signed ΤΡΥΦΩΝ ΕΠΟΙΕΙ.
- Cameo pendant, protected by crystal, in gold and enamelled setting.
- Head of Pyrrhus, in filagree setting, with emeralds and sapphires.

through of these present 24. the cat. with p. 100.

Head of Medusa, cut in emerald, with gold and enamelled setting of red and blue snakes with diamonds on their heads.

Iconic portrait in gold and enamelled setting.

Cameo portrait, by Alessandro Cesati, in a gold and enamelled setting.

Portrait of the Emperor Lucius Verus, in a gold and enamelled setting, with diamonds.

Agate cameo, set as a pendant in gold, with enamels and pearls.

The Genius of Rome, in an onyx of three strata.

Cameo portrait of the young Hercules, in gold and enamelled setting, with emeralds and a sapphire drop.

Hercules, cut in an antique nicolo in broad setting, with diamonds and rubies.

Jerome Savonarola, in grey onyx.

Philip II., of Spain, in grey onyx.

Alexander de' Medici, in Plasma.

Head of a Roman Emperor, in onyx of three strata.

Francis I., of France, in dark onyx—Queen Claude, of France, in pale layers on the other side of the last.

Queen Elizabeth, cut in a large nicolo.

Queen Elizabeth, cut in a small nicolo, in gold and enamelled setting, with diamonds, rubies, and pearls; engraved at back—"William Barbour caused this jewel to be made in commemoration of his deliverance from the stake by the death of Queen Mary."

Queen Elizabeth, cut in turquoise, in gold and enamelled setting, with diamonds, rubies, and pearls, said to have been preserved in the family of Wild, since the christening of its first owner, at which the Queen was present.

Ivory cameo of Hercules strangling the Nemean lion.

The Nativity, cut in pearl shell, in silver gilt and nielloed setting.

Winged centaur, cut in Cyprea shell.

Cameo portrait, in shell, with enamelled bust.

Cameo, in grey shell, of Hercules killing Cacus the robber.

Ganymede and an eagle, cut in grey shell, in gilt mount with steel brilliants.

The adoration of the Magi, cut in mother of pearl, set in silver gilt rim.

Pearl shell cameo, representing the triumphal entry of William III. into the Hague.

DISCUSSION.

Mr. J. B. MARSH said that the early cameo work which the reader of the paper had shown was certainly the most magnificent the world had seen.

The art of cutting such extremely hard substances had almost passed out of practice in these days; it was occasionally used, but, as cheapness now ruled the market, artists did not find it to their advantage to work in those materials. Cameos were now principally executed on the conch shell, brought from the West Indies. The most valuable shells were those the base of which was purple, the upper part was always white. Formerly ladies wore large cameos as brooches, but that fashion had died out, and smaller ones were worn on rings, set very artistically and beautifully.

Mr. ALAN COLE had been struck with the likeness between the designs on the gems with those in some of the Græco-Roman tapestries which had come from Upper Egypt, especially those illustrating mythological subjects. The treatment of some of the portraits also reminded him of those in Græco-Roman and Coptic textiles. Possibly the designers of such textiles and gems were contemporaries.

Mr. H. LONGDEN said that he had not any special knowledge of ancient cameos, but he had been much struck by the great beauty of the Renaissance settings of the cameos.

The CHAIRMAN, in proposing a vote of thanks to Mr. Davenport said that that evening was the first occasion he had seen coloured slides of gems thrown on the screen, and certainly it was a marvellous change from the engravings with which one had to be content not so many years ago. He congratulated Mr. Davenport on the skill he had displayed in preparing the slides. He entirely agreed with Mr. Longden as to the settings of the Renaissance gems; they were quite incomparably grand. With reference to the Roman gems, it could hardly be a matter of chance that most of the cameos came down to us from the age of Augustus or his immediate successors in the first half-century of our era; the inference rather was that that was the age at which the art of cameo engraving had attained its greatest prosperity, and that at no subsequent period had anything been produced equally worthy of preservation. The majority of the large gems showed portraits of Augustus, Tiberius, Claudius, Augustus's daughter Julia, and his wife Livia; Messalina, wife of Claudius, and other members of the Imperial family. The two largest cameos shown had been made for the glorification, the one of Augustus, and the other of Tiberius. He did not agree with all the points of interpretation given by Mr. Davenport, but that was a matter of no consequence, as hardly two people agreed upon them. There was a very beautiful cameo of Tiberius in Vienna, which Mr. Davenport ought to have shown, because it was signed by the artist who engraved it, Herophilus. He was one of three brothers, all known to us as gem engravers, sons of the famous Dioscorides, who engraved the portrait of Augustus, which the emperor used as a seal. It was therefore an intaglio.

VASES.

13th. Cameo head. Germanicus?
 w. of ΕΠΙΤΥΓΓΑ [NOV]
 No. 1589.



January 25, 1901.]

There were many seals still existing bearing the name of Dioscorides, but he was afraid upon a number of them the name had not been inscribed by himself. This family of gem engravers were Greeks by birth, and it was very likely they had inherited from the later Ptolemy period their gift and the traditions of cameo engraving. Mr. Davenport had shown a number of undoubted Ptolemaic cameos of large size. Possibly the cameo of Tiberius at Vienna had been quite rightly used as a proof that the whole family of engravers, the father and his three sons, worked equally in cameos as in intaglios. It was also very likely that some of the large cameos, if not most of them, were the work of that family. During the latter period of the Roman Empire the art of cameo engraving ceased, but not the love of gems, which remained a passion down to the time of the Byzantine Empire, and on into the Middle Ages, chiefly due to the influence of the early Church with its symbolism founded on precious stones, and with its delight in everything precious. In France, and he believed in England also, there were a number of inventories of the possessions of the mediæval church in the shape of gems. For instance, in the British Museum there was a manuscript of Matthew Paris, the monk of St. Albans, of the 13th century, and in one part of it was a drawing of a gem then in the abbey representing a Roman emperor. It is stated to be on sapphire, but that was doubtful; possibly any bluish stone would then be called sapphire. At any rate, no one knew what had become of it. With regard to the great Paris cameo, as had been stated, it was now exhibited without a setting. In the 17th century it was described by a French writer as being set in a magnificent gold frame with figures of the four evangelists at the corners, their names being inscribed beside them in Greek characters. That was quite descriptive enough to convince anyone that the setting was Byzantine. Unfortunately, Rubens's drawing of it, which was engraved and published by his son, did not include the setting, the artist probably thinking there was something incongruous in putting Byzantine and Roman work side by side. Any incongruity of that kind would gladly be forgiven nowadays for the sake of the proof which the frame would have afforded of the continuous love of ancient gems from the Byzantine period to the Middle Ages, and on to our time. The cameo was stolen about 1800 and taken to Antwerp for sale, and when recovered the gorgeous framework was missing. It was still more unfortunate that none of the great cameos possessed their original settings, but one could in a measure imagine what those settings had been like from a very pretty cameo of Augustus found a few years ago during excavations at a place called Tirlmont, in Belgium, and promptly purchased by one of the Rothschilds in Paris. It was found in its original setting, an exquisitely beautiful gold frame, and if one could magnify that to the size of the British Museum Augustus, or the Paris, or Vienna cameo, one

might get some idea of the excessive splendour of those gems in their original aspect. He hoped that Mr. Davenport's efforts to revive an interest in the study of ancient gems would meet with success. Having regard to the means now possessed of studying ancient gems by photographic reproductions, it would be strange if there were not some revival of that study. For the benefit of those who might desire to take up the subject, he might mention that a very excellent German book had been produced by Professor Furtwaengler, which contained very many beautiful illustrations and much sound criticism.

The vote of thanks to Mr. Davenport was carried unanimously.

Mr. DAVENPORT briefly returned thanks.

INDIAN SUGAR CANES.

By FRANCIS N. G. GILL.

In connection with "The Profits of Sugar-cane Cultivation in India and of Cane Sugar Manufacture,"* there is the main question of the quality of the Indian sugar canes. The writer drew the attention of the Indian Government to this question in 1890, and some time afterwards Dr. Leather, an agricultural chemist, was appointed to experiment on cane cultivation, and to report on the qualities of the canes cultivated by the ryots. The investigation has been going on now for several years, but unfortunately for want of previous knowledge of the technical chemistry and literature of sugar a great deal of the work done has been ill-advised as going over old ground, or as proceeding on mistaken premises. A very mischievous example of the latter is the assumption that all the cultivator is interested in, in the saccharine quality of his cane, is the total sugar, or sugar plus glucose contents of the juice, no distinction being made between the value of the white sugar and of the treacle, though in the world's market the contents of the raw sugar made by the cultivator in the former are worth five to six times the contents in the latter, unit for unit. In accordance with this assumption there is complete ignoring of the "quotient of purity" of all cane juices examined, and it is only possible to get at it in a few cases where the specific gravity of the juice happens to be given, and then it is seen that some of the canes examined are of very considerable value as "sugar" canes, suggesting that what is immediately required is a closer investigation of the circumstances in the cultivation of the particular canes which led to such good results. Dr. Leather arrives at the conclusion, from certain experiments supposed to have been carried out, that "neither the kind of manure, nor its amount, exercised any influence on the quality of the juice of sugar cane," which is diametrically opposed to the writer's

* See Society's *Journal* (vol. 48, p. 881, Nov. 9th, 1900).

experience, and to the notorious experience in the West Indies, even though only the proportion of glucose to total sugar be considered, and the quotient of purity be entirely ignored. Excessive manuring and excessive watering are both very inimical to the proper formation of sugar, though they may lead to a much heavier crop of cane. Where jaggery exclusively for Indian bazaar purposes is required the heavier crop may, and probably will, pay best; but where the cane, or the jaggery from it, can find a market for white sugar making, the much poorer crop of non-stimulated growth will have the advantage. Considered from the sugar-maker's point of view, a crop of 11 tons per acre with the jaggery in the cane juice of a refining value of 74.0 per cent. is of better value, to the extent of its less cost in manuring and cutting, than a crop of 15 tons to the acre, with the jaggery of a refining value of 62.3 per cent.; and this latter again is of the same greater value than a crop of 17½ tons with the jaggery of a refining value of 55 per cent. (accepting that the much larger quantity of treacle would be fully realised). Sugar canes of the soft descriptions, containing 8½ per cent. to 10 per cent. woody fibre, are so susceptible to the conditions of soil, watering and manuring, that the writer would be inclined to disregard the very obscure question as to which of them may be the heaviest cropper. On the other hand, he would regard the yield in juice a cane may afford as a practical question of some moment, but Dr. Leather's purely practical method of investigating it, by means of a small hand mill, as unsatisfactory, importing, as it does, so many factors, personal, mechanical, and individual in regard to the rattans pressed, into the determination. On all accounts it would be better to estimate the woody fibre in the cane and to accept that in single milling on the large scale this fibre will retain three and a half times its weight of juice.

In the following statements, Dr. Leather's results, as far as they have been made intelligible by a record of the densities of the juices, and the writer's results with Godavery and other canes, show what an uncertain indication the percentage of sugar (polarization) of the juice is to the value for sugar making, of the cane, and prove that a considerable number of the Indian sugar canes are good sugar canes if cultivated under suitable conditions.

In the 'Shaharanpuri,' 'Kajli,' 'Mungo' (a yellow green cane much like, as described, the 'Keli' of the Godaverī and the large, soft green cane of Coimbatore, examined by the writer in 1885, and which showed quotients of purity rising up to 93.4 per cent.), 'Bhurli,' 'Pansabi,' 'Kari,' 'Puri,' 'Dhaul' or 'Dhaur,' and 'Samsara' of Dr. Leather's analyses, and 'Bourbon,' 'Ribbon,' 'Purple,' 'Pala Bombay,' and 'Valu' canes of the writer's analyses, are found canes which show positively that they are capable of giving enormous profit in their working, and that cultivated and worked rationally in India they could compete, in the cost of

the sugar produced from them, most successfully with the beetroot in Europe.

The writer much regrets that in the management of a large business he was unable to find the leisure for the laboratory work required to elucidate many points of interest in the cultivation and constitution of the sugar cane not touched upon here.

DENSITIES, POLARIZATIONS, QUOTIENTS OF PURITY, AND REFINING VALUES OF SOME INDIAN CANE JUICES.

Bombay, N.W. Provinces, and Bengal, 1898. (Dr. Leather's polarizations and densities.)

| | Density. Baumé. | Polariza- tion. | Quot. of Purity. | Refining Value. |
|------------------------------------|--------------------|--------------------|---------------------|--------------------|
| VILLAGE-GROWN. | | | | |
| <i>Village.</i> | | | | |
| <i>Hartsimal.</i> — | | | | |
| 'Samsara'—yellow-green cane | 10.6 | 15.24 | 81.0 | 51.9 |
| 'Kajli'—purple cane | 11.3 | 17.05 | 85.2 | 60.8 |
| <i>Kantalgachi.</i> — | | | | |
| 'Samsara' | 10.7 | 15.24 | 80.0 | 53.6 |
| 'Kajli' | 10.9 | 17.05 | 88.3 | 65.2 |
| <i>Banpata.</i> — | | | | |
| 'Samsara' | 10.6 | 15.24 | 81.0 | 54.9 |
| 'Kajli' | 10.9 | 17.05 | 88.3 | 65.2 |

Mem:—It is most remarkable that the polarizations of the juice of the two varieties of cane, grown in three villages, should be absolutely identical in the case of each of the two varieties. Ordinarily, the polarizations, and analyses generally, of rattans from the same stool vary very considerably.

| | | | | |
|---|------|-------|------|------|
| <i>District.</i> | | | | |
| <i>Behea.</i> — | | | | |
| 'Pansabi'—tall, yellow-green cane | 9.7 | 14.56 | 84.6 | 60.0 |
| <i>Cawnpur and Shahjahanpur.</i> | | | | |
| 'Dikchan'—yellow-green cane | 8.3 | 10.99 | 74.5 | 46.7 |
| <i>Burdwan.</i> — | | | | |
| 'Puri'—clean yellow cane. | 11.3 | 18.02 | 90.0 | 67.8 |
| <i>Cawnpur, Bareilly, and Shahjahanpur.</i> | | | | |
| 'Dhaul'—drab, tinged green | 9.1 | 13.32 | 82.7 | 57.3 |
| <i>Cawnpur and Shahjahanpur</i> | | | | |
| 'Matna'—green and drab. | 9.2 | 13.36 | 81.9 | 56.1 |
| <i>Cawnpur.</i> — | | | | |
| 'Shaharanpuri'—yellow-green | 9.1 | 13.54 | 84.1 | 59.2 |
| <i>Bareilly.</i> — | | | | |
| 'Shaharanpuri'—yellow-green | 9.7 | 14.92 | 86.7 | 62.9 |
| GOVERNMENT FARM-GROWN (plot experiments). | | | | |
| <i>Farm.</i> | | | | |
| <i>Dumraon.</i> — | | | | |
| 'Samsara'—with castor cake | 9.3 | 12.35 | 75.3 | 47.5 |
| " cattle dung | 10.1 | 15.36 | 85.8 | 61.6 |
| <i>Burdwan.</i> — | | | | |
| 'Samsara'—castor cake | 10.2 | 14.24 | 78.6 | 51.8 |
| " cattle dung | 10.2 | 14.24 | 78.6 | 51.8 |

1. Cameos are small sculptures in low relief cut upon some substance precious because of its rarity, as the corundum or ruby, ^{lapis lazuli or turquoise - shell - ivory -} beauty, as ~~the emerald or opal~~, or hardness as the onyx. Cameos form an important division of the ~~largest~~ class of engraved ~~jewel~~ stones.

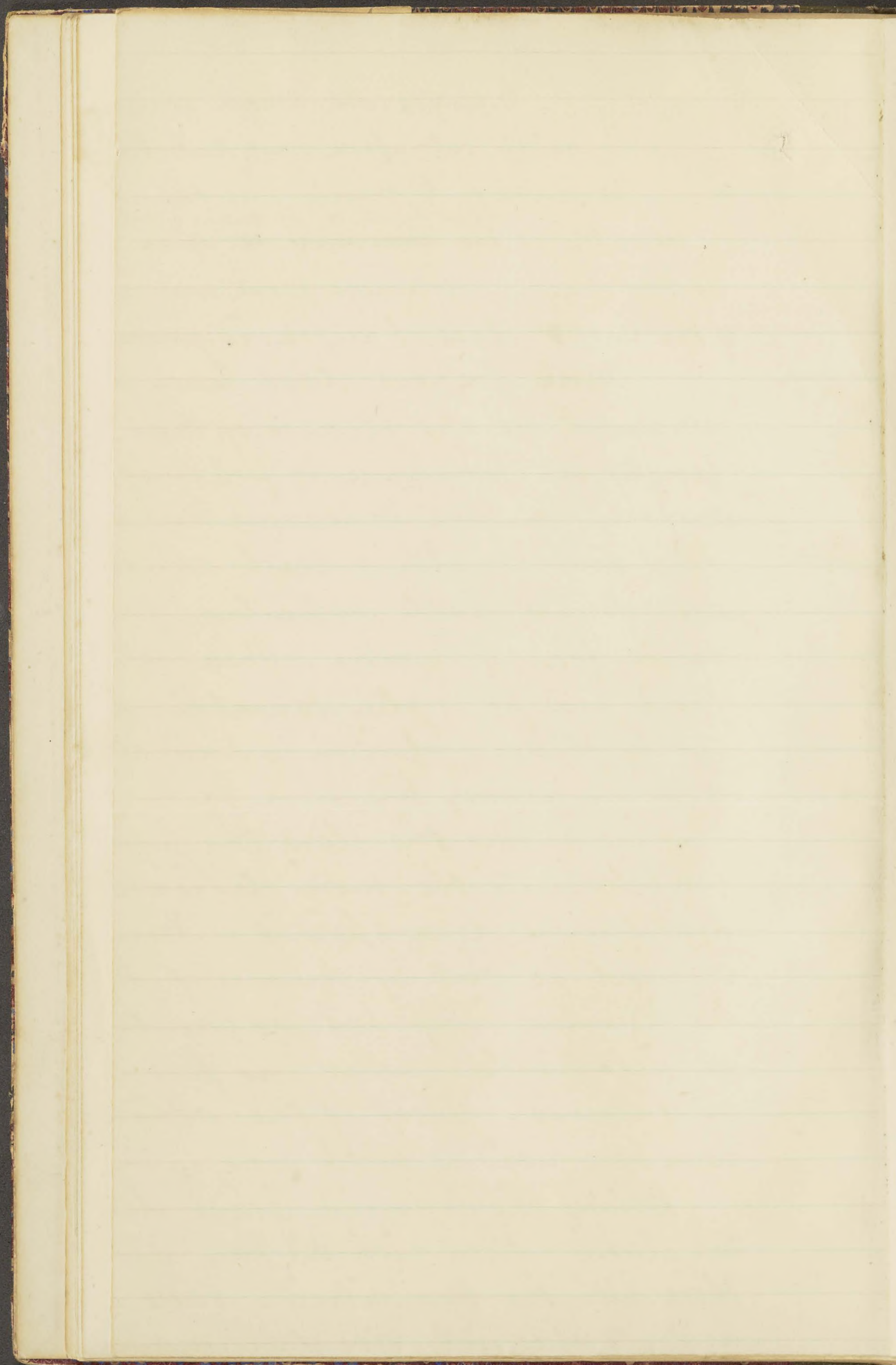
~~Jewel~~ Precious stones have been used as ornaments for ages because of their beautiful colour brought into prominence by polishing on the original surface. In time it became known that some stones would scratch or mark others. Some stones are soft, as steatite, serpentine, porphyry and various forms of limestone. These soft stones are all found used for Egyptian scarabaei, & they can be cut by flint or obsidian, hard steel or iron tools or by an emery file.

The harder the stone the higher polish it will take - and the more delicate the work that can be done upon it. Very hard stones can only be cut by means of diamond dust - the diamond itself has frequently been cut as an intaglio but never, as far as I know, as a cameo. Most of the other jewel stones have been used in both ways.

Besides the diamond, jewel stones fall into two classes, those with the base alumina, and those with the base silica - there are both acids, respectively oxide of aluminium ^(alumina) and oxide of silicon ^(silica) - Among the corundums are classed Ruby, Sapphires & emerald - oriental Topaz. Among the quartzes ^(silica) are ordinary Topaz, Crystal, Amethyst, Balas - and the translucent agates. The reds are usually caused by slight admixture of oxides of iron or manganese and the greens & blues by chromium oxide.

Cups, markings, or circular depressions cut by

x
stones -



means of a drill in rocks are common in many parts of the world, and the earliest signs of engraved designs on jewels are of a like character but of course minute. The small circular depressions can be traced in numbers of instances of early intaglios, more or less ripened by subsequent work which has merged the various circles into one another. At a very early date also splinters of diamond or obsidian were used to cut stones and engrave designs upon them.

^{Jeremias XVII. 1. "The sign of Judah is written with a pen of iron and with the point of a diamond it is graven upon the table of their heart."}
The earliest drills were worked by hand alone

but the drill revolving sideways by means of another wheel was apparently understood at a very remote period. In the 8th century B.C. the Nineveh seal cutters understood the use of such a drill fed with hard powder, they cut cylinders of agate, of jade, chalcedony or crystal, and wore the round the wrist. (Carved cutting in relief is ^{probably} a development from the intaglio.)

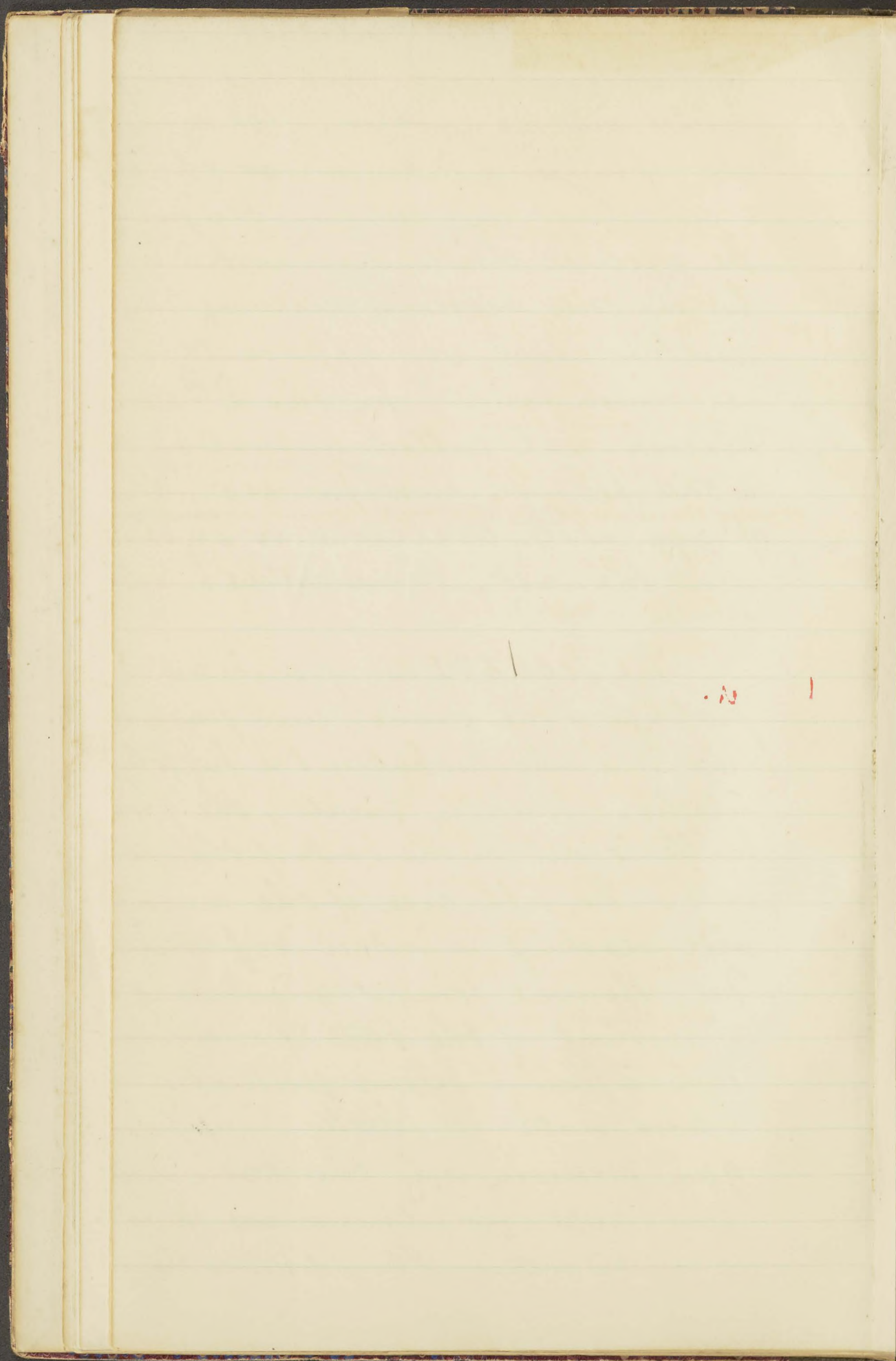
^{the ancient "Adamas" was probably corundum or diamond. an extraordinary variety is corundum - iron.}
^{probably maximum or emery - the "Smyrna" of Pliny & Theophrastus.}

The SCARABEUS of ancient Egypt is the prototype of the cameo, and from a larger point of view it is also probably the prototype of the intaglio. Usually small, the form of the sacred beetle is cut on the back of the flat engraved base. The influence of the scarab form is very wide reaching, & indeed it persists to the present day, the oval form of numbers of sealstones is a survival of the base of a scarab. The beetle back is found to become gradually modified more & more until it finally disappears, the "scaraboid" gem preserving only the basic outline. Ancient gems, except a few talismanic ones, have nearly always a rounded outline. Pliny describes the shapes of stones.

How
we read
next page
para 10
here.

*
Scarab
slide

*
beetle
slide



VASES.

Hard stones are now cut in much the same way as they were in the time of Dioskorides. both intaglio and cameo. A firm iron support holds a small wheel fitted with a small soft iron point

Ferrum Retusum.

Terbrarum ~~terro~~ Fluy. Fervor.

This small wheel is rapidly revolved by a treadle, and is kept fed with oil in which is a plentiful supply of diamond dust. (Bort.) The stone to be cut is held very firmly so as just to touch the turning wheel, but hardly to press against it, & this drives the diamond dust into the soft iron ^{which} in time ~~the~~ becomes studded thickly with spicules of the stone, when it at once begins to cut.

shell slides. At an early date cameos are found on shells.

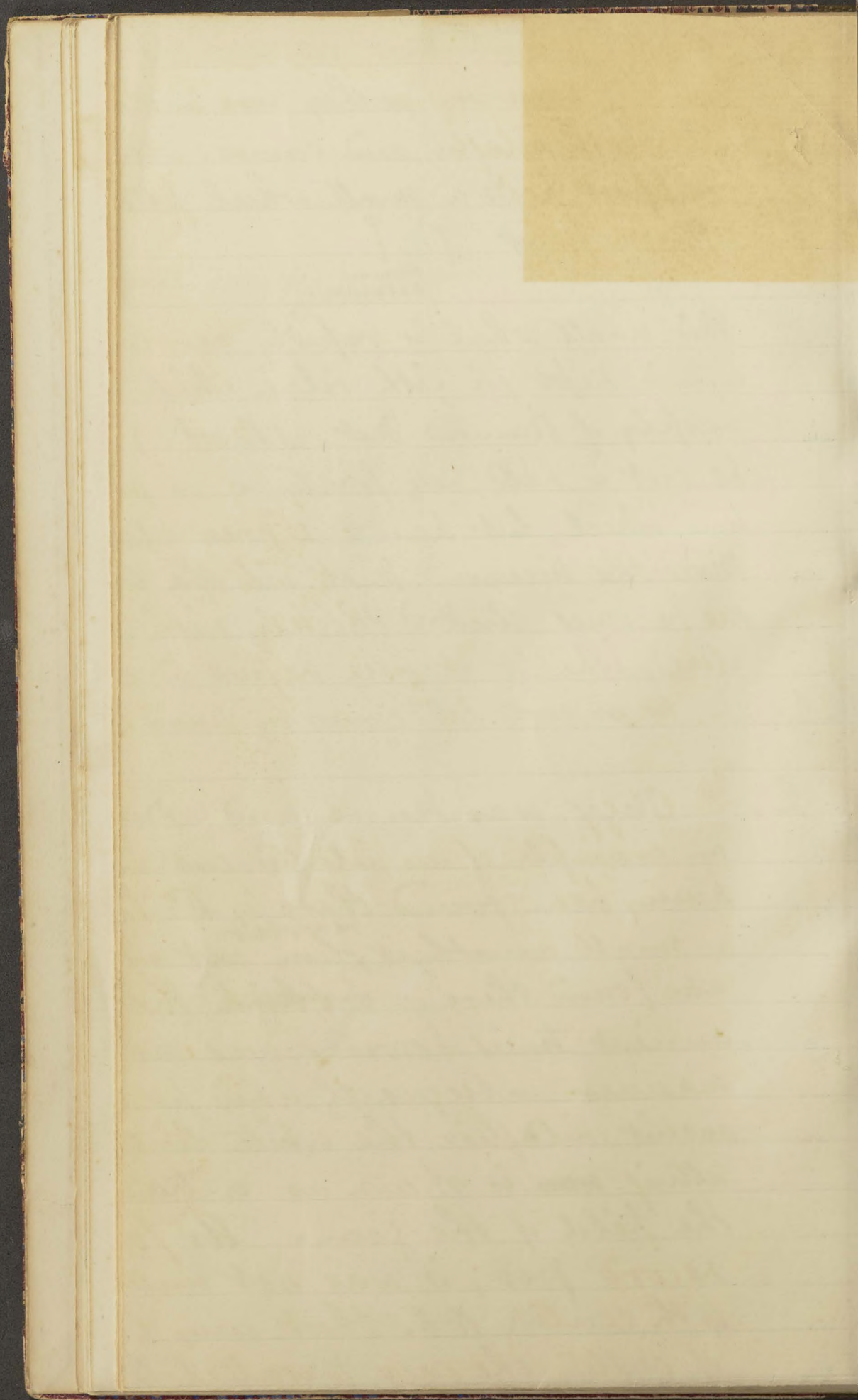
2. Onyx was known and admired at Mycenae an example of an intaglio cut in this stone having been found there by Dr. Pitt-Rivers - a small amethyst ^{resembling} them cut as a cameo was also found there. I think the onyx is very ancient times however was not cut in the manner subsequently used for cameos. In all ancient intaglios the white line in the dark setting ~~was~~ is shown as a band crossing the field of the gem. As far as any record goes, it was not until about the 3rd century B.C. that any lapidary thought of cutting the onyx parallel to the trend of its strata rather than perpendicular. The two finest existing cameos showing two heads in profile are Ptolemaic, of the 3rd century B.C.

2 Ptolemaic cameos.

red. Perchlorate of iron
black. sugar
blue. Iron with Ferro-cyanide
then. Nitrate of nickel.

of Wolfram or prase blue. The birds is sulphuric acid.

thinned by nitric.



VASES.

the subject & portrait cameos
of flat form, I have to show you one
or two slides of the beautiful vases &
dishes which have been cut as cameos.

These are found of ancient date cut in
hard stone and in glass. There are
specimens in London and at Naples of which
^{& at Paris the cup of P. Remus.}
I have slides, & other smaller vases cut
in a similar way are at Brunswick,
St. Petersburg and Vienna & Berlin. In
China there have been made numbers of small
exquisite bottles of stone and glass cut
in a like way - & there is a fine collection
of the sent by Mr. Geo. Sattler in the
Victoria & Albert Museum.

slides
8.45.

or other of these
antique slides are

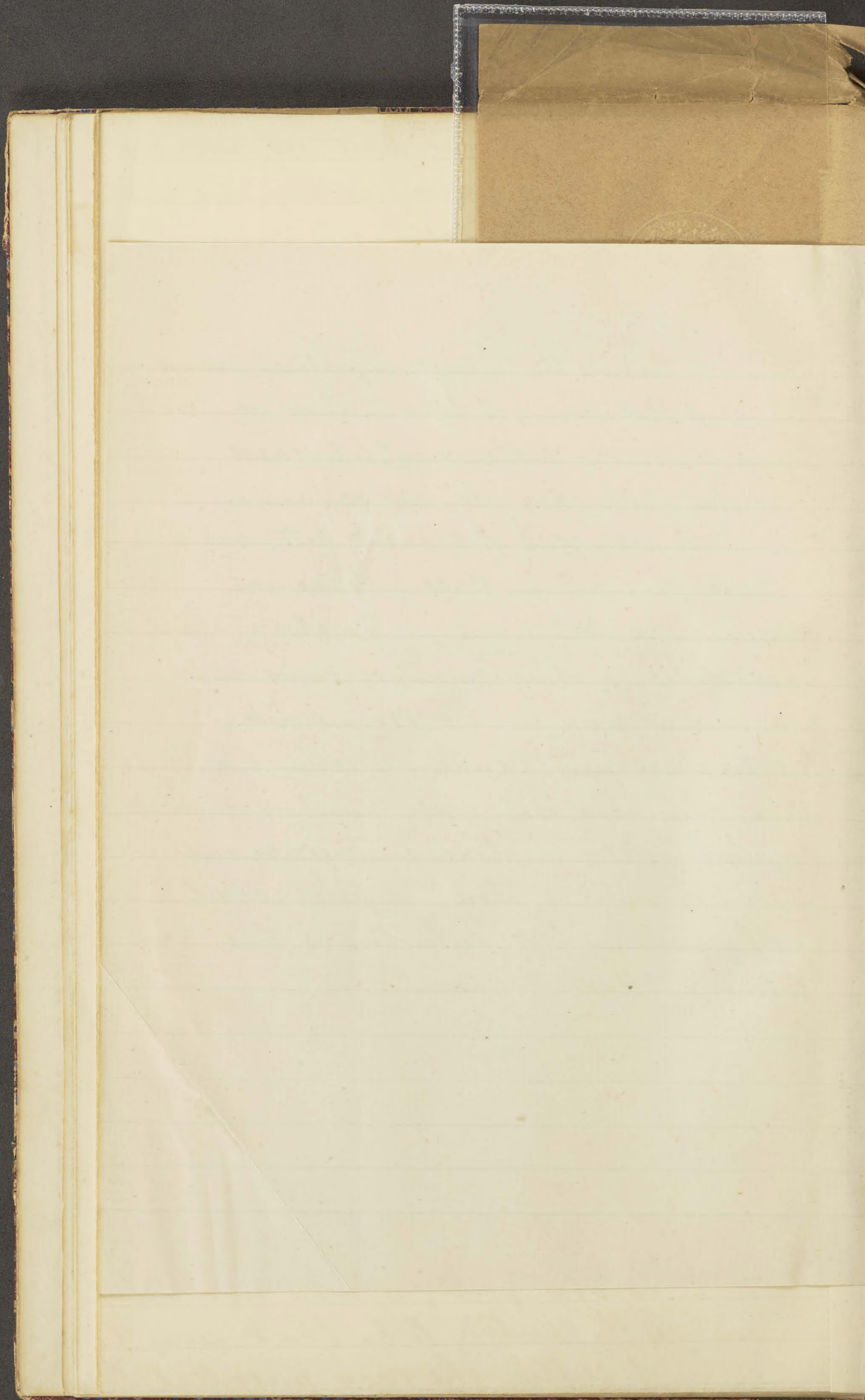


Besides the subject & portrait cameos
of flat form, I have to show you one
or two slides of the beautiful vases &
dishes which have been cut as cameos.

These are found of ancient date cut in
hard stone and in glass. These are
specimens in London and at Naples of which
^{& at Paris the cup of P. Remps.}
I have slides, & other smaller vases cut
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China there have been made numbers of small
exquisite bottles of stone and glass cut
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of them sent by Mr. Geo. Sattler in the
Victoria & Albert Museum.

slides
p. 45.

"or other" of these
antique slides are

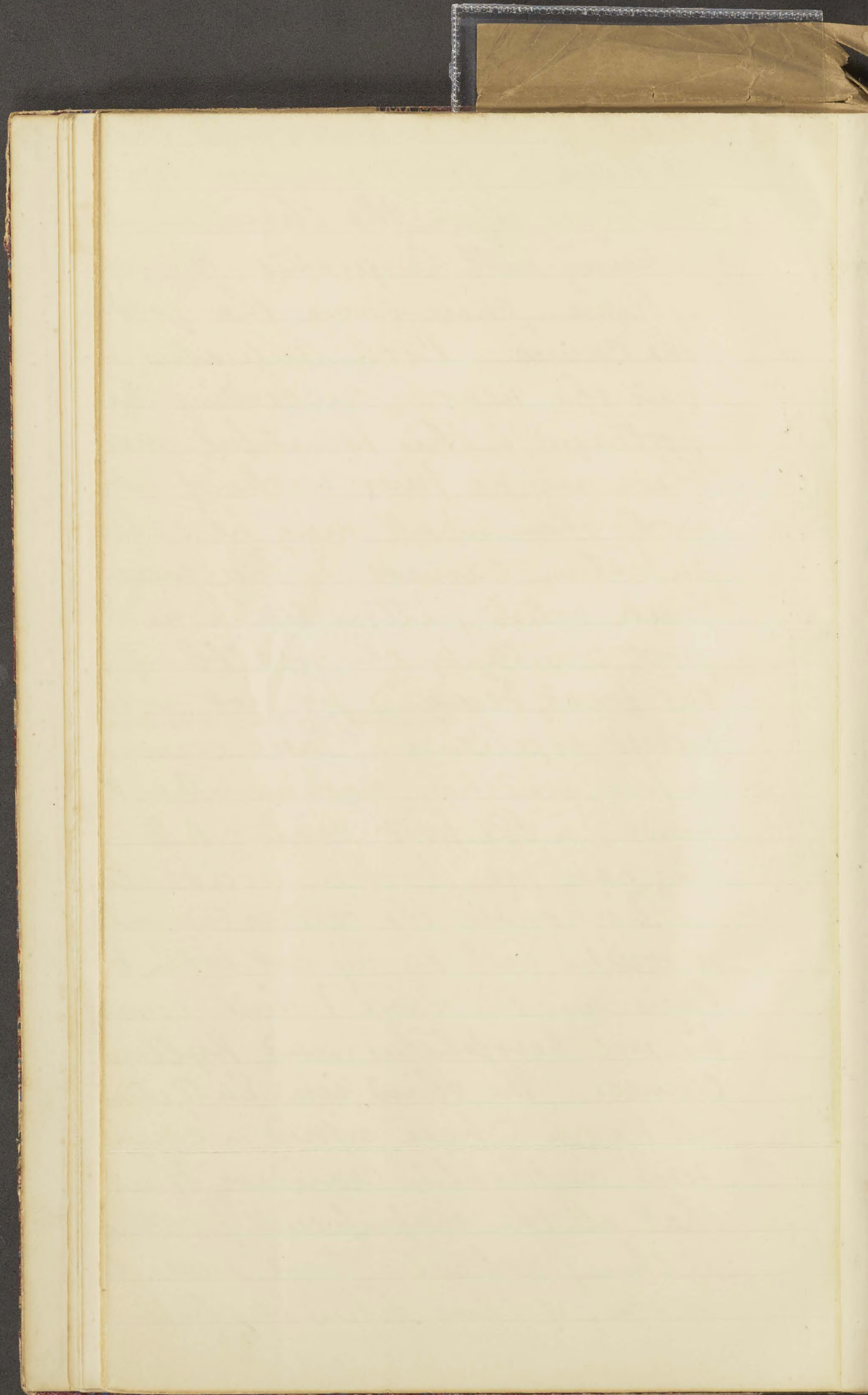


3. After these Ptolemaic cameos there is a considerable lapse of time before any other fine cameo work appears. Of course it may have existed, but it has not survived. Glass pastes appear to have taken the place to some extent of stone cameos, and they were made at Rome in great numbers during the last few centuries before the Christian era. Then beginning with Augustus, the first Emperor of Rome, there came the golden period of the cameos. Both Augustus and his family and the nearly succeeding Emperors were portrayed in this beautiful medium, and there are no finer works of art in the world than what may be called the Augustan cameos. They were made by Greek artists, attracted from their own poor country by the wealth of Rome and the great demand for art work of the highest excellence. ^{said to have been fostered by the treasure of Nearchus (brought to Rome by Pompey in 1st Century)} These cameos are in as fine condition now as when they were made, in the first century A.D. except where they have been broken accidentally.

Dioskouides the celebrated intaglio engraver is credited with having cut both the large Paris and the large Vienna cameos, and his sons Herophilus and Hyllus both signed cameos. The third in Eutyches is I believe not known to have signed a cameo, but some authorities consider that it is probable that all the magnificent portrait cameos of this particular time were done by one or other of these gifted artists.

Antique slides and those of the vases ^{Antique gems are likely to show the high portions abraded. rough back surfaces and small margins.}

8.45
8.50
slides
8.45.



4. with the accession of Constantine the Great to the ~~empire~~ Imperial power, in the 4th century came about a radical change in the art of Rome. ~~The~~ Art had been declining here for some time, and when Byzantium became the chief town of the Eastern Empire, Christian ideas superseded the classical which had hitherto prevailed. In many cases the attributes of ~~existing~~ ^{mythological personages} ~~superstitions~~ are found altered to suit the new regime -

Hercules becomes David

Perseus & the Gorgon = David and Goliath

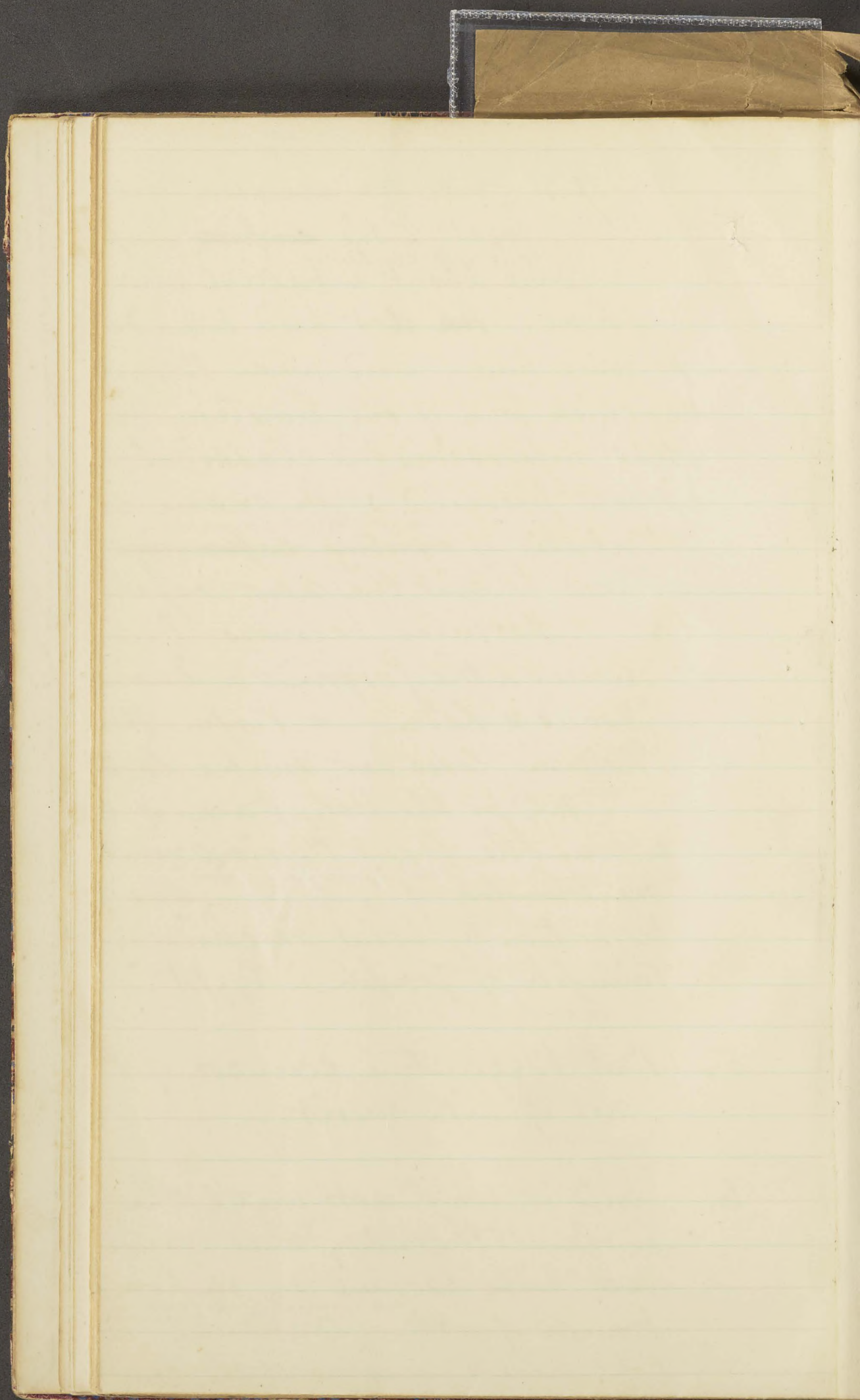
Venus & Leda = Virgin Mary

Medusa loses her snake locks and does duty for the Holy Face of St. Veronica.

& even the great Paris cameos ~~representing~~ the triumph of ^{the "Agate de Tibère"} ~~the~~ was preserved from destruction by being re-christened as the "Triumph of Joseph in Egypt."

5. But Byzantine canons of themselves are not of high merit.

6. and it was not until the Renaissance in the 15th century that cameo cutting once more became an important ~~and~~ ^{and classical designs} branch of art. [Cardinal ^{and} ~~Bembo~~ ^{claimed the ascendancy} Bembo, afterwards Pope Paul II., was one of the great collectors of this period, and his collection, at his death, was acquired by Lorenzo de' Medici, who added largely to it and indeed became perhaps the greatest collector of cameos that ever lived. His collection is now ^{chiefly} dispersed between the



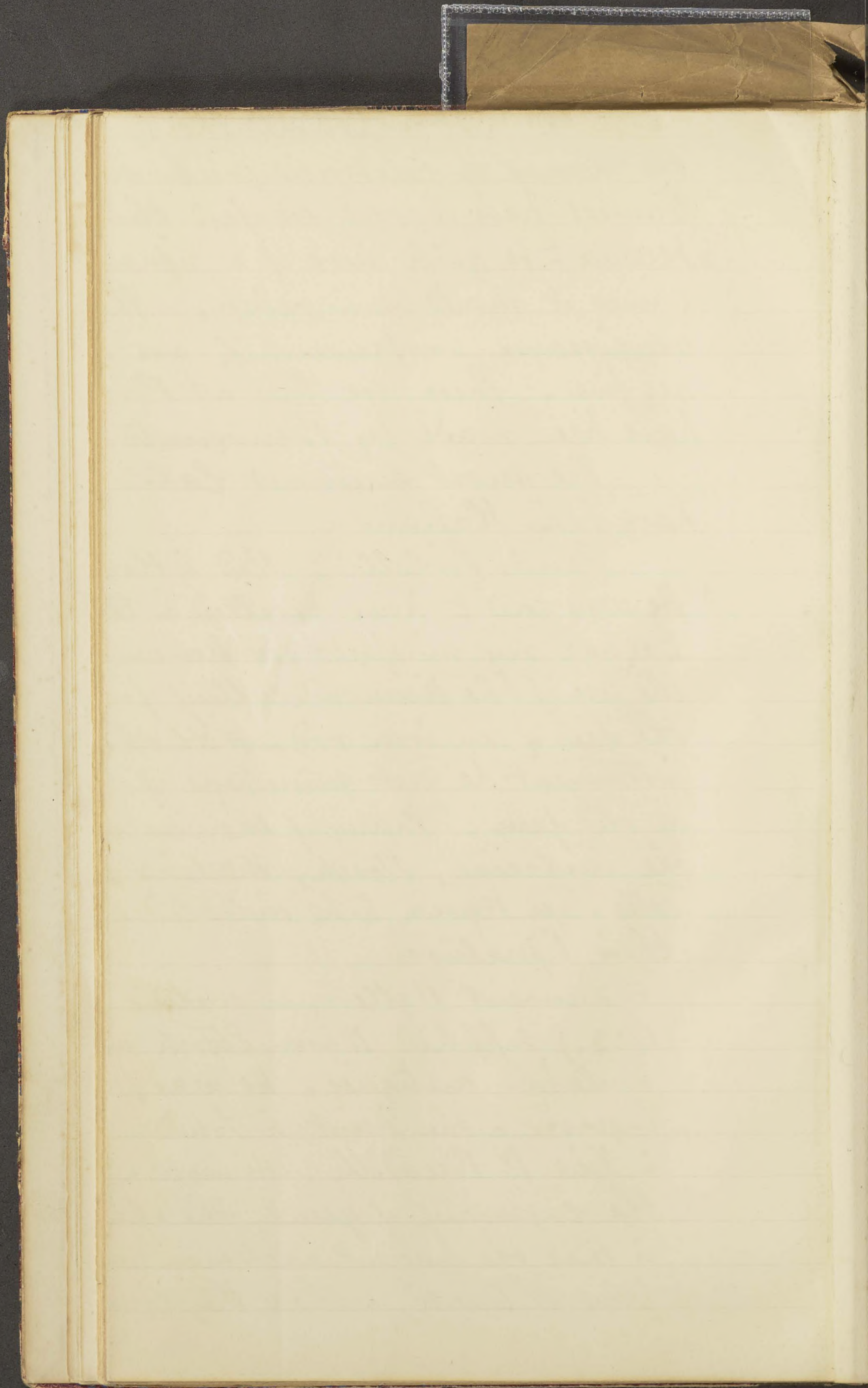
Museums of Naples, Florence and Paris.

Renaissance cameo-cultures largely copied old work, and very well they did it. They also unfortunately collected old gems and re-touched and re-polished them, often adding the names of celebrated Greek engravers. Cameos have largely escaped this deprecation, because to be quite sure of a signature on a cameo it should be in relief. The settings of renaissance workmanship are however often very fine. There are two at Paris said to have been made by Benvenuto Cellini.

The most eminent later gem-engravers have been Italians.

Giovanni Pirletti died in Rome in 1737. He was said to have excelled in technique & to equal any ancient workman. He revived the use of the diamond cutting point ~~set~~ at the end of an iron rod. With this powerful instrument he cut numbers of false signatures on old gems. Many of the inscribed gems in the Audreini, Stosch, Medici & Bestborough colls. are known to be indebted to him for their signatures.

Laurent Natter, a native of Nuremberg, (1723.) supplied Baron Stosch with many imitation antiquities. He was for a time Engraver to the Mint in London. & in 1754 lived in No 18 Piccadilly. He wrote a treatise on the engraving of gems, the chief point of which is that the ancient workmen used the revolving point or "tournet", & that they could polish ^{soft} stones

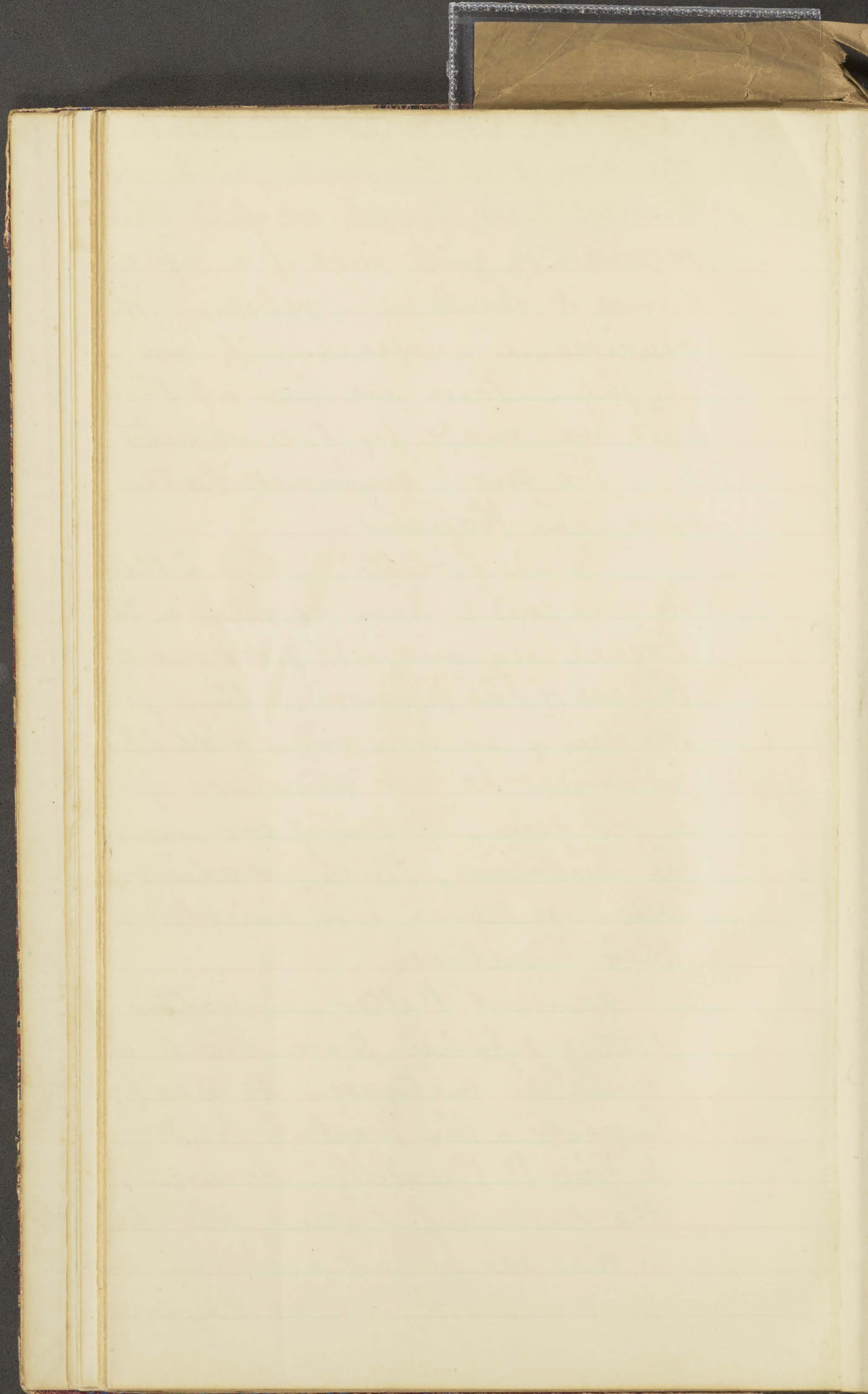


letter th
also insists
be done with
He says that
le plus pénible
tous", and a proof
that a cameo repre
Napoleon I. by M.
1861 and continue
finished until 187.

Jacques Le
Merdun de Pompadour
she made some, h
her, Louis XVI., N
curiously enough,
he could not ever
were signed for h
He used the diamond
his gems with trip

Benedetto Pietro
great Italian cameo
P. 1. 10. 17

Grotto in Crete--
Penco w way.



7

better than any modern lapidary. He also insists that much work must always be done with the diamond point alone.

He says that "La glyptique est l'art le plus pénible et le plus rebutant de tous", and a proof of this is found in the fact that a cameo representing the apotheosis of Napoleon I. by M. Adolphe David, begun in 1861 and continually worked at, was not finished until 1874.

Jacques Le Guay a Frenchman, taught Madame de Pompadour the art of gem cutting & she made some, he made cameo portraits of her, Louis XVI., Marie Antoinette &c. &c. but curiously enough, though a fine draftsman, he could not ever learn to write, & his cameos were signed for him by another artist. He used the diamond point largely & polished his gems with tripoli powder and a quill.

Benedetto Pistrucci was the last of the great Italian cameo-cutters. He was Chief Engraver to the Royal Mint and designed the beautiful group of St. George & the Dragon which is still kept on the reverse of our silver coins.

Few of our English gem-engravers have done much in cameo work. Burch R.A. (d 1814) is perhaps one of the best known. He was a fine worker and

Renaissance slides.

q
L slides
q. 15-

Mr. Chalmers - oval.



Stones for eyeglasses.

Carbon. Diamond only.

Aluminium. Corundum -

{ oxide of aluminium - Sapphire - { Per-oxide of iron
or chromium oxide

- Ruby -

oriental Topaz

- " Emerald (chromium oxide)

" Aquamarine

" Hyacinth.

amethyst.

Silica - all Quartz

{ oxide of Silicon

Reds. Iron or manganese -
Blues & greens Chromium oxide.

Transparent

Rock crystal.

Amethyst

(oxide of manganese)

Carbuncle.

(iron or manganese)

Bales. Spinel

Topaz. Chrysolite

or Peridot

Aquamarine

(chromium oxide)

Tourmaline.

Translucent.

{ opals. camelian-
chalcedony.

Chrysoprase. Plasma

- Hematite

- Malachite

{ metallic }

sesquioxide of iron { Egypt

carbonate of copper { Arizona

- Turquoise

- Callaité.

- lapis lazuli

- Hauyne

- Opal.

- vitreous silica.

{ Chalcedony
{ Ethiopia

Hematite & malachite other -

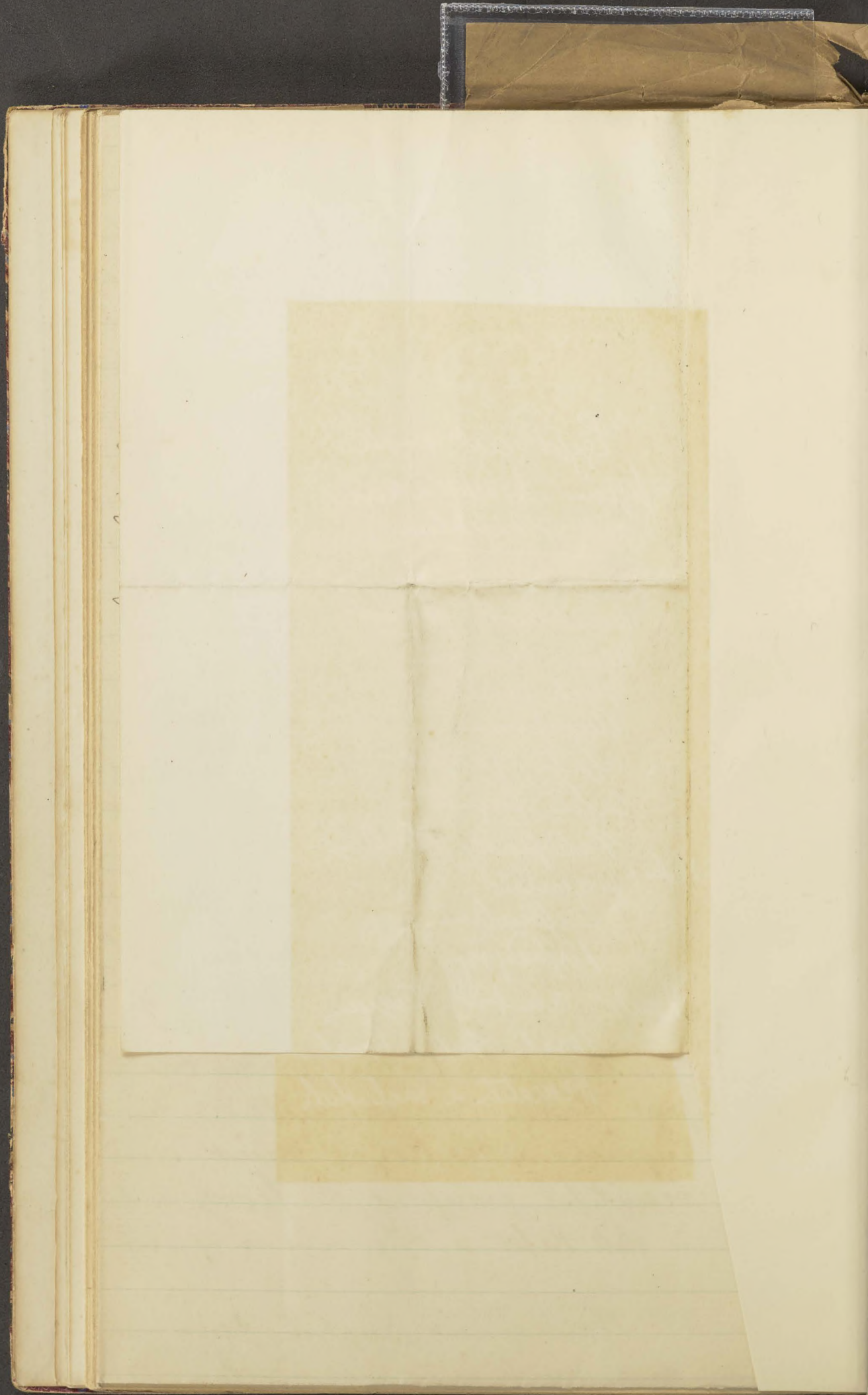
u

'Cray acesata -

color -

The "ouza" or magic eye.

a protection against vermin
in the eye.



Carbon - Diamond only.

Aluminium (for clay)

Corundum

new or of
iron or
chromic oxide.

Egypt cut small
lapis - ~~lapis~~ in never
ruby or sapphire)

Emerald - ~~lapis~~
amethyst. ~~lapis~~

Aqua - Marra -

Rock crystal.

Chrysoprase -

Apatite - Jasper -

Lapis lazuli -

Feldspar. Obsidian

Rocks - ~~lapis~~

Terrestrial

Porphyry.

Rocks - Amber - Turquoise

Coral shell - Pearl

Hematite & malachite

both

cut in
lapis lazuli
hematite
feldspar

Turquoise

Lapis lazuli

steatite

terrestrial.

Lecher

other -

u

'Cray acesata -

lapis -

The "ouza" or night eye.

a protection against vermin
in the eye.



Carbon - Diamond only.

Aluminum (in clay)

Corundum

Sapphire -

Spence's of
Iron or
chromic oxide.

ruby

meilich tokens -

The Egyptians made
small figures of all sorts - both
in round & low relief -

Lions - cats -

cut in
carnelian

hippopotamuses

hematite

Crocodiles

feldspar

Eagles

turquoise

Wings - serpents

lapis lazuli

Cynocephales -

steatite -
serpentine.

Frogs.

Esquivers -

Divinities - Neit. Sekhet

Phtah, Anubis & others -

& symbols as well

Crux acroata -

Lotus -

The "ouza" or magic eye.
a protection against vermin
& the evil eye.

With Egyptian new Chaldea.
made very common. Was
found a great art in the
beginning.



BRITISH MUSEUM,

LONDON: W.C.

Carbon - Diamond only.

Aluminum (for clay)

Corundum

Sapphire - { greenish or
iron or
chromic oxide.

ruby

meilich topaz

meilich amethyst

& " agate - iron or chromic oxide.
emerald - chromic oxide.
meilich

Silica - all "Quartz"

Transparent - Rock Crystal.

- Amethyst.

(oxide of manganese)

- Carbuncle.

(iron or manganese)

- Balas or Spinel.

- Topaz

Translucent - Chrysoprase or

Peridot.

apate

chalcidite

chrysoprase

plasma

- Aqua Marina

or false emerald.

(chromic oxide)

- Tourmaline

(many colors)

Hematite - metallic. sesquioxide of iron { ^(Fe₂O₃)

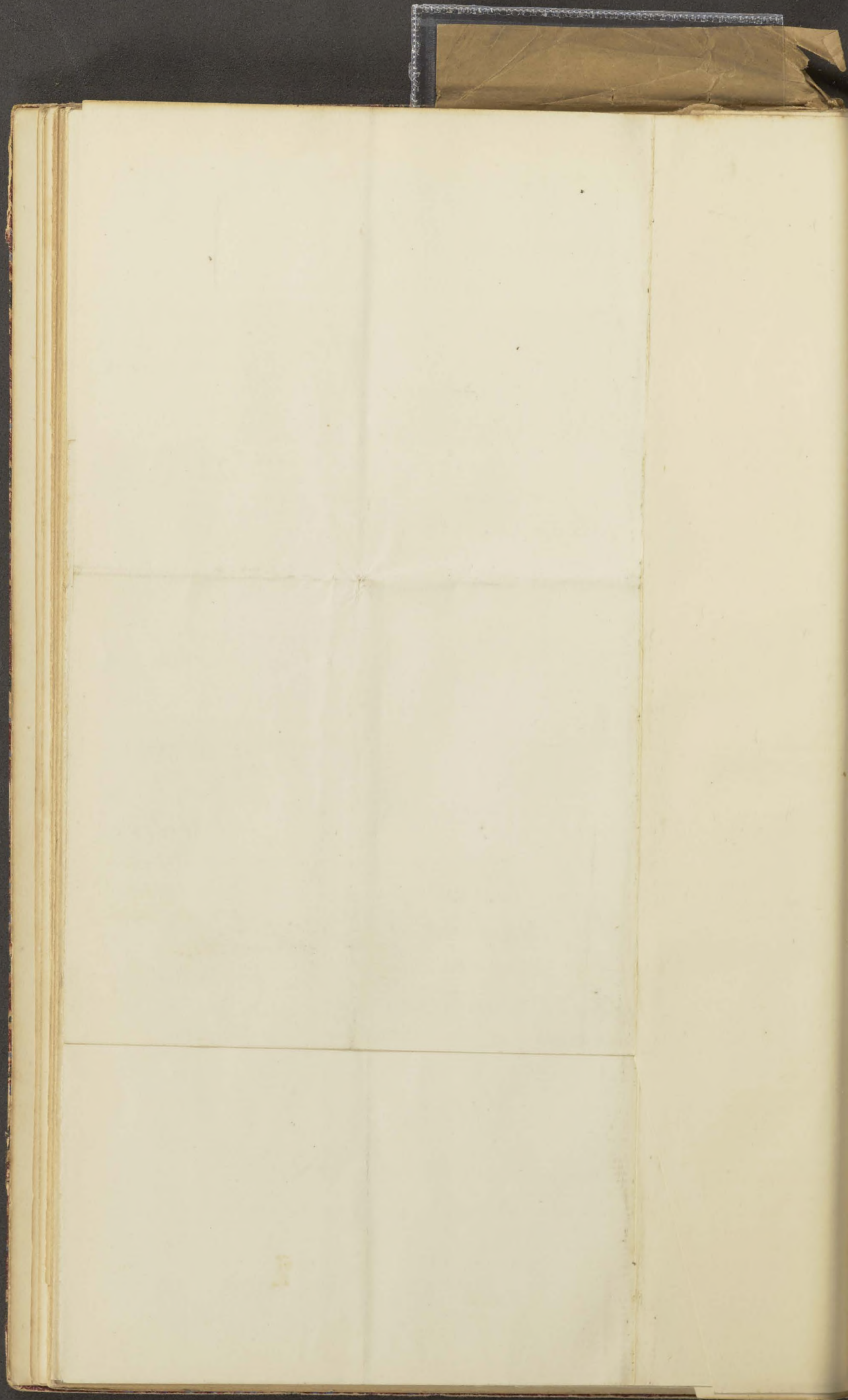
Malachite - " carbonate of copper { ^(CuCO₃) Chalcidite

Miscellaneous.

THE ETYMOLOGY OF CAMEO, AND THE CLASSIFICATION OF "GEMS."

I regret that I was unable to be present, as I intended, at the most interesting paper read on the evening of the 15th inst., before the Applied Art Section of the Society of Arts, by Mr. Cyril Davenport, on Cameos, for I missed not only a rare pleasure

to call attention
lations issued by the
pear to me admirably
enterprise, instead of
India's great mineral
This is specially the
dia which has not been
vey map of the country,
t there is the largest field
ll more or less under the
of political agents, who, as
or men whose studies have
e into such subjects. The



ing rival claims for mining concessions, "due regard will be had to operations conducted under cover of an exploring licence." If a valuable deposit is found, but the limit of its occurrence cannot at once be readily determined, a prospecting licence may be taken out over a comparatively larger tract till a proper survey can be made. When this is completed, the licensee is entitled to a formal mining lease of the block he ultimately decides to select. In most other mining countries not only is the amount of mining land which the prospector can take up much less, but he can acquire no rights till he has actually "pegged out" the boundaries of this small area. Mr. Rogers would have been far worse off in Australia, for instance, for there he would have had no means of safeguarding his rights while waiting for the arrival of his mining expert. I cannot regard a penny an acre, amounting altogether to £7 10s., as an exorbitant charge for obtaining preferential rights over nearly three square miles for a whole year. The Rs. 100 (£16 13s. 4d.) is only in the nature of a deposit. I am glad to hear from Mr. Henry Taylor of the progress that has been made in the substitution of machinery for hand-labour on the Kolar goldfield, and trust that, with careful training of intelligent men, it will be found practicable to extend the matter still further. The employment of such large numbers of men underground is very undesirable, as it increases the difficulty of sanitation, and is a fruitful source of accidents, besides facilitating gold stealing. The introduction of means of raising and lowering the men by machinery is a very urgent one. No doubt the uncertainty as to the extension of the ore in depth rendered the companies reluctant to incur the heavy expense of sinking vertical shafts. Probably the best course in such a case would be to test the extent of the deposits by the diamond drill. I hope, however, to deal fully with the questions of labour, mine regulations, and the prevention of mining accidents in a later contribution to the Society's *Journal*.

Mr. ALEXANDER ROGERS writes:—At the conclusion of the discussion on Dr. Evans's paper yesterday I said that I had intended to lead the discussion in a new direction, but that I refrained from doing so because the lateness of the hour would not permit of my expatiating properly on the subject. I now write to explain what my object was, and to call attention to the subject of the mining regulations issued by the Government of India, which appear to me admirably calculated to crush all mining enterprise, instead of encouraging people to develop India's great mineral resources, as they should do. This is specially the case in the part of Central India which has not been mapped in the Geological Survey map of the country, as it is here particularly that there is the largest field open for research. It is all more or less under the charge or administration of political agents, who, as a rule, are military officers or men whose studies have not led them to inquire into such subjects. The

greater, therefore, is the necessity for encouraging the efforts of outsiders to ascertain and develop the resources which at present are lying dormant for want of exploitation. I propose now to give you an instance, which I can personally vouch for, of the method in which the supposed intention of the Government of India to open out the country is acted up to locally. There are two villages on the outskirts of a low range of hills in the Rava Kánta political agency to the north-east of Baroda, which contain extensive deposits of the finest iron. Having discovered those valuable deposits, which are particularly rich in the villages mentioned above, I applied for a prospecting licence in them with a view to temporarily keep other prospectors out of the field, and suggested that a small sum of 50 rupees should be paid in each village. I received an answer that I had not complied with the rules of the Government of India by fixing on the exact spot where operations were to be carried out. I could not have done this without the advice of a mining expert. It was then suggested that the difficulty could be met by my taking licences for the whole area of the two villages, which had never been surveyed, at the rate of 4 annas an acre. The estimated area came to 1,800 acres, so that the amount demanded was 450 rupees, in addition to 100 as a deposit on each licence, or a total of 650, which would only have protected me for a single year. I wrote to expostulate to the Supreme Government, and was finally offered by the Government of Bombay licences at 1 anna, in place of 4 annas an acre; that is, for 350 instead of 650. This has been finally declined, and I only bring it forward in order to show the penny wise and pound foolish policy that is being pursued, a policy which appears to me well calculated to stop all mining enterprise. Prospecting or exploration licences of the protective character asked for should, I think, be granted gratis, some kind of security only being required in order to provide against wilful injury to any property having an appreciable money value on the part of prospectors or explorers. I will not go further at present to inquire into the condition for mining licenses offered by the rules, but would suggest that such mining firms as J. Taylor and Sons should be consulted on the subject, especially with regard to such particulars as that no two shafts should be sunk within a certain distance of each other.

Miscellaneous.

THE ETYMOLOGY OF CAMEO, AND THE CLASSIFICATION OF "GEMS."

I regret that I was unable to be present, as I intended, at the most interesting paper read on the evening of the 15th inst., before the Applied Art Section of the Society of Arts, by Mr. Cyril Davenport, on Cameos, for I missed not only a rare pleasure

but the opportunity of consulting him and the distinguished scholar who presided on the occasion, before offering the observations I then wished to make, and now submit in writing, without the advantage of their superior "correction or approval," on the etymology of the word "Cameo," as the basis of a systematic classification of "gems," in the sense of precious, semi-precious, and other stones, shells [note "Saulini Cameos"], glass [note "Tassie Gems"], and similar substances, exquisitely wrought in minute size, by means of the wheel [tornus], or borer [terebrium], and file [lima], with inscriptions, or symbolical, or mythological; or other designs, of high artistic, and historical, or antiquarian, or other associational interest.

Mr. Cyril Davenport is literally accurate in saying that the derivation of the word Cameo is unknown.* But I hold that it would be less exactly precise, and, in reality, more correct to say that the etymology of the word is undetermined, or rather, as yet, undemonstrable. The word Cameo, as now spelled by us is the Italian [the word as once spelled by us, Camaieu, is the German] form, of the Low Latin "camæus." Beyond this nothing can as yet be positively stated. But inasmuch as Cameos are in fact a sub-division of "gems," as that term is used in the sense of anaglyphs or cameos, diaglyphs or intaglios,—in English entaglios and entails,—and coil-anaglyphs, or counter-sunk cameos, there can be no doubt whatever of the Low Latin camæus being, as was suggested by Mahn on purely philological grounds, a corruption of the Latin gemma, "a bud," "the eye of a peacock's feather" "a pearl," "a gem," *i.e.*, "a precious stone" and, in a slangy sense, "a beauty!" The word goes back to an Aryan root signifying "swelling," "fatness," &c., found in the Greek *gemizô* "I load," the Latin *gemere* "to sigh," heave up the breast—[compare *Scalæ Gemoniæ*, "the Steps of Sighing" of the Clivus Capitolinus, leading from the Tullianum, or so-called Carcer Mamertinus, to the Forum, down which the bodies of executed criminals were dragged by hooks to be cast into the Tiber]—*gemmare* "to bud," *gemmaus* "jeweled," *i.e.*, "budded all over," *geminare* "to double," and *geminus* "paired," and the English gimballs, or pair of rings in which ships compasses are swung, gyves, or shackles, and O Jimini! *i.e.*, O Castor and Pollux!

The objection to this etymology is that, besides camæus, we have, with the same meaning, the Low Latin form of camaynus and camyx, and other equally

outlandish variants. But after gyves and gimballs, as cognates of gemma, why not camaynus and camyx, which are acknowledged to be identically the same words as camæus? I adventure to read camaynus and camyx as "cameo on onyx." There is, therefore, no reason why the derivation of camæus, *i.e.*, of Cameo, from gemma, should not be tentatively put forward, and kept forward, until it can be disproven; and why the meaning of the word should not be extended, so as to generically cover the three varieties of artistic "gems," the raised, the sunk, and counter-sunk. Cameos, as specifically defined—that is restrictively regarded as anaglyphs—are minute reliefs, carved chiefly on agates—such as the onyx, and particularly the Sardonyx—formed of layers of different colours, so that the figure in one colour rises from a ground of another colour. But the term has long been applied to similar small carving on shell, in which the inner structure is differently coloured from the outer; and in fact to any tiny low relief of artistic character wrought on any hard enduring [non-metallic] substance such as lava, glass, and even peach stones.

Tentatively accepting Mahn's etymology, we should be able to classify all these charming little *objets d'art* in their natural correlation; and to get rid of all the present confusion of them with each other, and of the class of sculpture to which they all belong with other classes of artistic productions. We should then have Cameos = "Gems"; and under this generic heading, A, *anaglyphs, estaglios or extails*; B, *Diaglyphs, intaglios or entails*; and C, *Dianaglyphs, or Coil-anaglyphs*. The terms in italics are new coined, and "estaglio" and "Dianaglyph" would certainly be useful words; but extail is suggested merely to balance the obsolete English word "entail"; *i.e.*, obsolete in the sense of Cameo. It is radically the same word as tally, tailage, tailor and tassel, and again text, textile, toilette and mantel; and the Italian *tagliare* "to engrave"; the Latin *telum* "a weapon," *tela* "a weaver's beam," *texter* "a weaver," and *tignarius* "a carpenter"; the Greek *tektôn* "a carpenter," and *technê* "art"; and the Sanskrit *takshan* "a carpenter."

This classification includes under the word Cameo, = "Gemma," the whole of Glyptics [*Sculptura*], as a subdivision with Statuary [*Statuaria*],—in stone, metal, wood, ivory,—of Sculpture [*Sculptura*], and entirely separates this art from decorative embossed, engraved, pierced, and damascened work in metal [*Cœlatura, toreutike*]; except that statuary, glyptics, and decorative chiseling, hammering, and encrusting of metals, are all joined together as derivatives from Pottery. In the words of Pasioteles [Pliny xxxv. (12), 45]:—"Laudat [Varro] et Pasi telem qui plasticem matrem statuaria, sculpturæque, et cœtaturæ esse dixit." The very etymology of the words glyptics, carving, and engraving indicates that the arts they denominate should not be confused. The word glyptics is the Greek *gluptēr*, a chisel; and cognate with the Latin

* By some authorities it is stated that the word cameo is the Arabic *camea* "a charm," but, so far as seeking for such a word in dictionaries goes, I have not been able to find it. Pliny, xxxvii, 11, 73, mentions a stone, *cyamias*, the "bean stone," so named from its similitude to the fruit of *Nelumbium speciosum*, the Sacred Lotus of the Egyptians, and *kuamos* of the Greeks. Its beans bear a sufficient resemblance to the carnelian scarabs of the Egyptians and Etruskans, to suggest the possibility of Cameo, and the alleged Arabic word *camea* being formed, or partly formed, from *kuamos* and *cyamias*.

glubere, "to chip off," "to peel," etc., and gluma, "a husk"; the German *kloben*, "anything cloven," and the English clove [of garlic, not cloves, which = clou, "a nail"], clover, Clough, etc. Carving, goes back to the Greek *grapheion*, "a style," "a pen"; and is cognate with the Latin *graphicus*, "descriptive," and *grammatica*, "grammar"; and the English programme, glomery [*i.e.*, grammar], glamour [grammar in the sense of magic], graft, carve, &c. Engraving goes back to an Aryan root, signifying to scratch, tear up, found in the Sanskrit *geishti*, a "boar," literally "a tearer up," "a grubber," and *ghor*, terrible; the Greek *charadra*, a "ravine," *charactêr*, a "mark," scratched, torn, or gashed, and *Gorgo*, the wrinkled Medusa: the Latin horror, "bristling," "horrible"; the Spanish graba, "to dig," "to engrave"; and our English ordure, Algernon, [*i.e.*, "hairy"], grice [a pig], grisly, grave-[yard], engrave, &c. Strictly speaking, we ought to apply the term engraving to what we designate carving, and carving—etymologically work with the *stulos*, stilus, or style—to what we call engraving. The transfers of the meaning of these two terms are due simply to confusion in the classification of the objects they originally designated.

As I have dealt so much with etymologies I would add in conclusion that Mr. Cyril Davenport probably errs in deriving "sard" in Sardonyx without qualification from the Persian "zard, meaning yellow" [or green—for the word is cognate through the Greek with Chloe, chlorine, bile, and cholera; through Latin with jaundice; and through the Teutonic languages with green, grass, grow, golden, yolk, yellow, &c.]. Sard or Sardine—not the Sardinian pilchard—is the Greek *Sardion* and *Sardeios*, meaning the Stone of Sardes; just in the same as Chalcedony means the stone of Chalcedon. But very few words have an absolutely unmixed etymology; and the Persian *zard*, as well as Sardes, may be latent in Sardonyx.

GEORGE BIRDWOOD.

25th January.

MEETINGS OF THE SOCIETY.

ORDINARY MEETINGS.

Wednesday evenings, at Eight o'clock:—

FEBRUARY 6.—"Some Experiences of Motor Bicycles." By JOSEPH PENNELL. MAJOR H. C. L. HOLDEN, R.A., F.R.S., will preside.

FEBRUARY 13.—"Arsenic in Beer and Food." By WILLIAM THOMSON.

FEBRUARY 20.—"Some Features of Railway Travelling, Past and Present." By FREDERICK McDERMOTT.

FEBRUARY 27.—"The Outlook for the World's Timber Supply." By DR. W. SCHLICH, C.I.E. SIR WILLIAM THISELTON-DYER, K.C.M.G., F.R.S., will preside.

MARCH 6.—"Modern Artillery." By LIEUT. ARTHUR TREVOR DAWSON, late R.N. SIR BENJAMIN BAKER, K.C.M.G., will preside.

MARCH 13.—"The Proposed High-Speed 'Monorail' between Liverpool and Manchester." By F. B. BEHR. SIR WILLIAM PREECE, K.C.B., F.R.S., will preside.

Dates to be hereafter announced:—

"Evolution of Form in English Silver Plate." By PERCY T. MACQUOID.

"Clocks, Carillons, and Bells." By A. A. JOHNSTON.

"Multicolour Printing." By ELMER Z. TAYLOR.

"The Synthesis of Indigo." By PROF. RAPHAEL MELDOLA, F.R.S.,

"Recent Work on the Photography of Colour." By SIR WILLIAM ABNEY, K.C.B., F.R.S.

"School Work in Relation to Business." By SIR JOSHUA FITCH, LL.D.

"Patent Law Reform." By ALEXANDER SIEMENS.

"Testing Distant Vision." By R. BRUDENELL CARTER, F.R.C.S.

"The Use of Motors in War." By COLONEL R. E. CROMPTON.

"Servia." By EVERARD R. CALTHROP, M.Inst.C.E.

"Thames Steamboat Service." By ARNOLD F. HILLS.

"The Industrial Resources of Portugal." By J. BATALHA-REIS.

INDIAN SECTION.

Thursday afternoons, at 4.30 o'clock:—

FEBRUARY 14.—"The Greek Retreat from India." By COLONEL SIR THOMAS HUNGERFORD HOLDICH, R.E., K.C.I.E., C.B., late Survey of India. The EARL OF HARDWICKE will preside.

FEBRUARY 28.—"Railways and Famine." By HORACE BELL, M.Inst.C.E., late Consulting Engineer to the Government of India for Railways. SIR JOHN WOLFE BARRY, K.C.B., F.R.S., will preside.

MARCH 14.—"The Growth and Trend of Indian Trade—A Forty Years' Survey." By HENRY JOHN TOZER, M.A.

APRIL 18.—"Madras the Southern Satrapy." By JOHN DAVID REES, C.I.E.

MAY 2.—"Science in Ancient and Modern India." By PROF. JAGADIS CHANDRA BOSE, M.A., D.Sc.

MAY 16.—"The Town and Island of Bombay—Past and Present." By L. R. WINDHAM FORREST, formerly Chairman of the Bombay Chamber of Commerce.

The meetings of March 14, April 18, and May 2 will be held at the Society of Arts; those of February 14, February 28, and May 16 at the Imperial Institute.

COLONIAL SECTION.

Tuesday afternoons, at 4.30 o'clock:—

FEBRUARY 19.—"The Crisis in China—its Causes and Solution." By JOSEPH WALTON, M.P. SIR EDWARD A. SASSOON, Bart., M.P., will preside.

APRIL 30.—“The British West Indies.” By SIR NEVILLE LUBBOCK, K.C.M.G., Chairman West India Committee.

MAY 7.—“The Coal Problem—its Relations to the Empire.” By LIEUT. CARLYON W. BELLAIRS, R.N.

APPLIED ART SECTION.

Tuesday evenings, at 8 o'clock :—

FEBRUARY 12.—“Recent Advances in Pottery Decoration.” By WILLIAM BURTON. CHARLES H. READ, Sec. S.A., Keeper of the Department of British and Mediæval Antiquities, British Museum, will preside.

MARCH 5.—“Early Playing Cards and their Decoration.” By RICHARD STEELE.

MARCH 12.—“Some Examples of Romanesque Architecture in North Italy.” By HUGH STANNUS, F.R.I.B.A. THOMAS G. JACKSON, R.A., will preside.

APRIL 16.—“Greek Vases, their Evolution of Form and Ornament.” By CECIL SMITH, LL.D.

MAY 21.—“The Rise and Development of Egyptian Art.” By PROFESSOR W. M. FLINDERS PETRIE, D.C.L.

CANTOR LECTURES.

Monday evenings, at 8 o'clock :—

J. LIBERTY TADD, “Elementary Art Education.” Lecture IV., February 4.

W. J. POPE, “The Bearings of Geometry on the Chemistry of Fermentation.” Four Lectures. February 11, 18, 25, March 4.

MEETINGS FOR THE ENSUING WEEK.

MONDAY, FEB. 4... SOCIETY OF ARTS, John-street, Adelphi, W.C., 8 p.m. (Cantor Lectures.) Mr. J. Liberty Tadd, “Elementary Art Education.” (Lecture IV.)

Farmers' Club, Salisbury Hotel, Salisbury-square, E.C., 6 p.m. Mr. C. S. Read, “Pure Beer.”

Royal Institution, Albemarle-street, W., 5 p.m. General Monthly Meeting.

Engineers, in the Theatre of the United Service Institution, Whitehall, S.W., 7½ p.m. Inaugural Address by the President, Mr. Charles Mason.

Imperial Institute, South Kensington, S.W., 8½ p.m. Mr. J. C. Hannah, “The Decay of China.”

British Architects, 9, Conduit-street, W., 8 p.m. President's Address to Students.

Medical, 11, Chandos-street, W., 8½ p.m.

Victoria Institute, 8, Adelphi-terrace, W.C., 8 p.m. Mr. E. J. Statham, “Ancient Script in Australia.”

London Institution, Finsbury-circus, E.C., 5 p.m., Mr. A. Diósy, “The Economic Future of Japan.”

Biblical Archaeology, 37, Great Russell-street, W.C., 8½ p.m.

TUESDAY, FEB. 5... Royal Institution, Albemarle-street, W., 3 p.m. Prof. J. A. Ewing, “Practical Mechanics.”

Junior Engineers, Westminster Palace Hotel, S.W., 8 p.m. Mr. A. H. Barker, “Works Management.” Civil Engineers, 25, Great George-street, S.W., 8 p.m.

Zoological, 3, Hanover-square, W., 8½ p.m. 1. Mr. Oldfield Thomas, “The Mammals of the Balearic Islands.” 2. Dr. W. G. Ridewood, “The Structure of the ‘Bonnet’ of the Whale (*Balaena australis*).” 3. Mr. G. A. Boulenger, “A List of the Batrachians and Reptiles obtained by Dr. Donaldson Smith in Somaliland in 1899.”

Pathological, 20, Hanover-square, W., 8½ p.m.

Photographic, 66, Russell-square, W.C., 8 p.m.

Mr. E. Marriage, “Romanesque Architecture.”

WEDNESDAY, FEB. 6... SOCIETY OF ARTS, John-street, Adelphi, W.C., 8 p.m. Mr. Joseph Pennell, “Some Experiences of Motor Bicycles.”

Geological, Burlington-house, W., 8 p.m. 1. Mr. Richard D. Oldham, “The Origin of the Dunmail Raise.” 2. Miss Igerna B. J. Sollas, “The Structure of the Rhatic Plant *Naiadites*.”

Archæological Association, 32, Sackville-street, W., 8 p.m.

Obstetrical, 20, Hanover-square, W., 8 p.m. Annual Meeting.

Archæological Institution, Oxford Mansion, Oxford-street, W., 4 p.m.

THURSDAY, FEB. 7... Royal, Burlington-house, W., 4½ p.m. Antiquaries, Burlington-house, W., 8½ p.m.

Linnean, Burlington-house, W., 8 p.m. Mr. H. M. Bernard, “The Necessity for a Provisional Nomenclature for those Forms of Life which cannot be at once arranged in a Natural System.”

Chemical, Burlington-house, W., 8 p.m. 1. H. J. H. Fenton and Mildred Gostling, “The Action of Hydrogen Bromide on Carbohydrates.” 2. “Note on a Method of Comparing the Affinity Values of Acids.” 3. Mr. R. M. Craven, “Organic Derivatives of Phosphoryl Chloride.” 4. Dr. A. W. Titherley, “Synthetical Work with Sodamide Derivatives.”

London Institution, Finsbury-circus, E.C., 6 p.m. Mr. Budgett Meakin, “The Moorish Empire.”

Royal Institution, Albemarle-street, W., 3 p.m. Rev. Henry G. Graham, “Society in France before the Revolution.” (Lecture I.)

Civil and Mechanical Engineers, Hotel Victoria, Charing-cross, W.C., 8 p.m. Mr. M. Mawson, “A Description of the Staines Reservoir Works.”

FRIDAY, FEB. 8... Royal Institution, Albemarle-street, W., 8 p.m. Weekly Meeting, 9 p.m. Prof. G. H. Bryan, “The History and Progress of Aerial Locomotion.”

Mechanical Engineers, Storey's-gate, St. James's-park, S.W., 8 p.m. Adjourned Discussion on Mr. Humphrey's paper, “Power Gas and large Gas Engines for Central Stations.”

Astronomical, Burlington-house, 3 p.m. Annual Meeting.

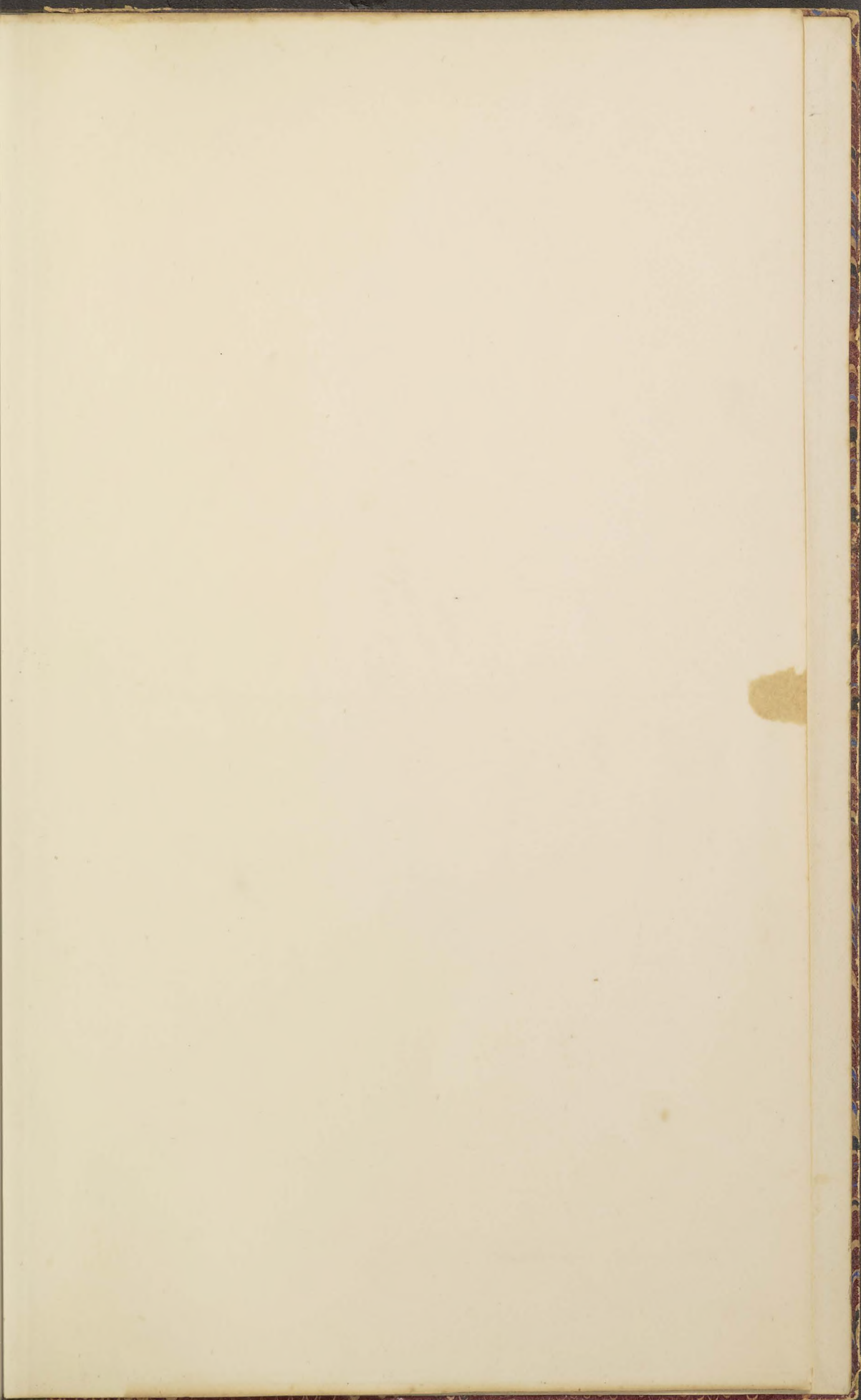
Geologists' Association, University College, W.C., 8 p.m. Address by the President, “Twelve Years of London Geology.”

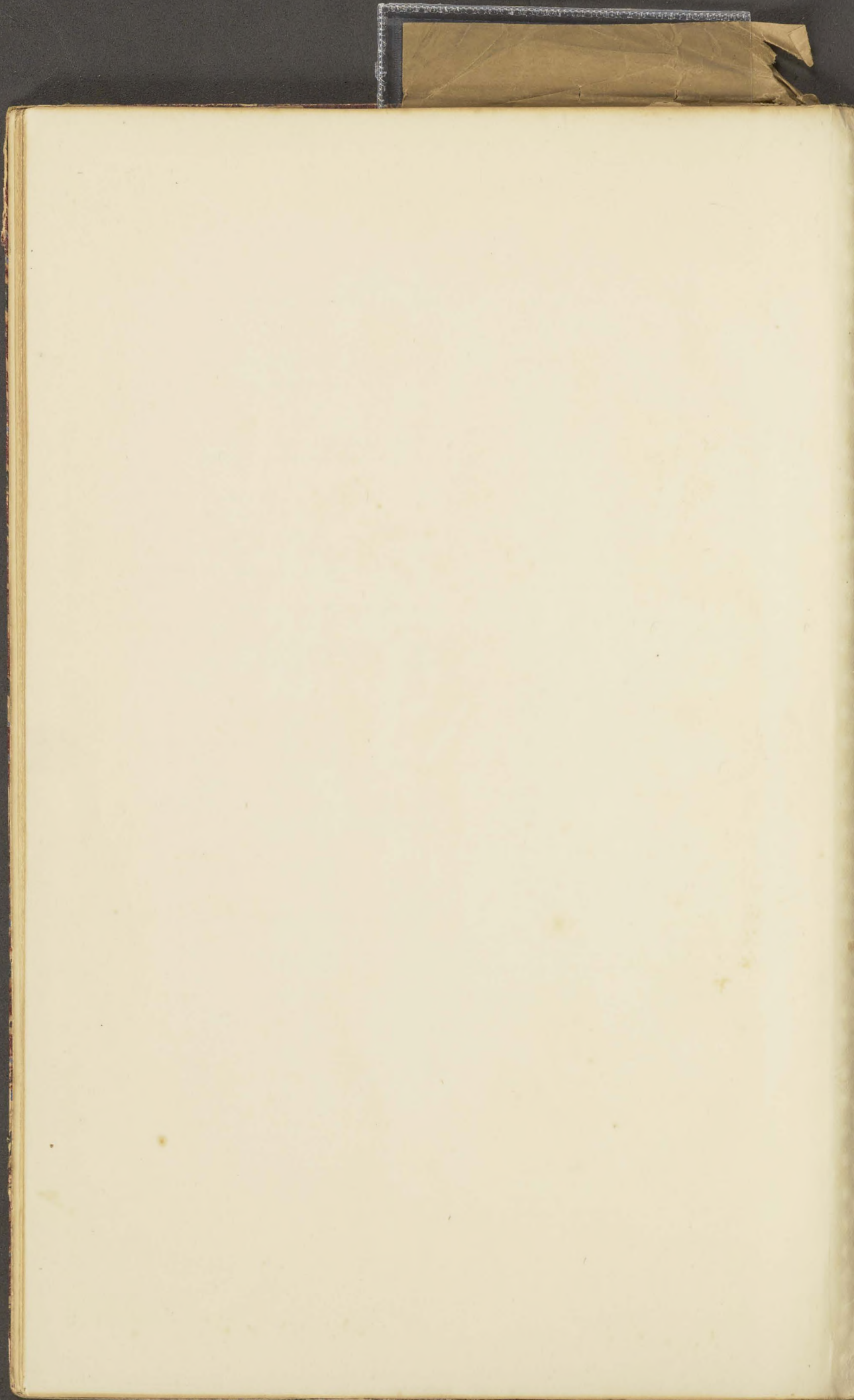
Junior Engineers, Westminster Palace Hotel, S.W., 8 p.m. Mr. L. F. Awde, “Electric Power Supply in the Metropolis.”

Clinical, 20, Hanover-square, W., 8½ p.m.

Physical, Chemical Society's Rooms, Burlington-house, W., 5 p.m. 1. Annual General Meeting. Address by the President. 2. Prof. R. W. Wood, “A Mica Echelon Grating.”

SATURDAY, FEB. 9... Royal Institution, Albemarle-street, 3 p.m. Mr. F. Corder, “Vocal Music, its Growth and Decay.” (Lecture I.)





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12 Caesars

A.D. 44 B.C. **M.** 1. Caesar

B.C. 31 - A.D. 14 **D.** 2. Augustus - grand-nephew of Julius Caesar.

14 - 37 **M.** 3. Tiberius - son of Mrs Augustus by another husband Tiberius

37 - 41 **M.** 4. Caligula - son of Drusus son of Germanicus son of Drusus son of Mrs Augustus

41 - 54 **M.** 5. Claudius - son of Drusus son of Mrs Augustus by Tiberius

54 - 68 **Su.** 6. Nero - son of Mrs Claudius by another husband.

68 - 69 **M.** 7. Galba.

69. **Su.** 8. Otto

69. **M.** 9. Aulus Vitellius.

69-79. 10 **D.** Vespasian -

69-79-81 11 **D.** Titus - his son.

79-81-96 12 **M.** Domitian - brother.

Last of the 12 Caesars.

7 murdered. 3 died naturally & 2 committed suicide.

{ Augustus was the
1st Emperor.

{ Caesar was Imperial Perpetual Dictator only
& ruled the Republic

Rome founded 753?

753? - 510. Kings of Rome. Romulus.

Numa Pompilius
Tullus Hostilius.

Ancus Marcius. Tarquinius Priscus
Servius Tullius. Tarquinius Superbus.

Republic
510 - 31.
Sylla. Caesar.
Augustus.

² Divorced
Pomponia

² D. Augustus

Livia

Tiberius

Marcellus - Julia + Agrippa
Agrippa.

^{3M} Tiberius

A.D. 14-37.

Julia

Drusus

Germanicus

^{M. 5} Claudius

^{M. 5} Claudius - ^{Philippianus} uncle of Caligula - Messalina
A.D. 41-45.

2nd his niece Agrippina.

Agrippina

Nero

Drusus

^{M. 4} Caligula

^{6. 5} Nero

Poppoea

Otho

A.D. 55-85

^{M. 7} Salba, a old courier ^{low origi} no relation.
A.D. 68-69.

^{S. 8} Otho - Divorced husband of Poppoea.
a soldier. A.D. 69.

^{M. 9} Anulus Vitellius - a soldier - ^{low origi}
A.D. 69.

Good Government.
Flavian &
Antonine epoch.

D. 10. Vespasian - a soldier. low origin.
↓ A.D. 69-79.

Flavian D. 11. Titus - son of Vespasian. A.D. 79-81. a good emperor.

M. 12. Domitian. A.D. 81-96. cruel.

D. 13. Nerva. A.D. 96-98. very mild - a wise man -

D. 14. Trajan - a Spaniard. a soldier. A.D. 98-117.

D. 15. Hadrian, a cousin of Trajan. A.D. 117-138. art patron - revival -

D. 16. ^{Antonine} Titus Aurelius - a senator. Pius. A.D. 138-161. Excellent Prince.

- D. 17. Marcus Aurelius, adopted son. A.D. 161-180. Excellent ruler and best.
with him Lucius Commodus Verus.

M. 18. Commodus - cruel & wicked. A.D. 180-192.

86 days. M. 19. Pertinax - Prefect of Rome. humble origin. 192. soon killed - 86 days.

66 days. ^{Didius} M. 20. Julianus. Bought the empire - a rich senator. 193. 66 days -

D. 21. Septimius Severus - 193-211.

M { 22. Caracalla & Geta, sons of Severus. joint emperors -
He won killed Geta - A.D. 211-217.

M 23. Macrinus, the Praetorian Prefect. A.D. 217-218. an African.

M 24. Elagabalus. a Priest. A.D. 218-222. most luxurious.

M. 25. Alex. Severus. cousin of last.
mild. 222-232.

M. 26. Maximin, a soldier - 235-238. very big & strong.

M. 27. Maximian & Balbinus. soldiers - 238.

M. 28. Gordian. soldier. 238-244.

SL 29. Philip. an Arab. a Prefect. 244-249. a soldier.

SL 30. Decius a senator. 249-251. Persecuted Christians. a soldier.

M. 31. Gallus. a general. 251-253.

M. 32. Aemilian - a general. 253. Four months.

{ M. 33. Valerian - a general. 253-260.

{ M. 34. Gallienus his son. 260-268. a soldier.

Julia & Septimius Severus
Caracalla
her sister

Moera T
Pompeia
Elagabalus
Maurice
Alex. Severus

D. 35. Claudius II. a soldier. 260-270. a great general.

M. 36. Aurelian. a general - very strong. 270-275.

M.D. 37. Tacitus - a senator - simple. good. 276.

D. 38. Probus. a general. 276-282. Wise ruler.

M. 39. Carus. Praetorian Prefect. 282-283.

M. 40. Carinus and Numerian, sons of Carus. 283-284.

Retired 41. Diocletian, a peasant. chief of Domestic Guards. 285-305. with Maximian.
First wore a Diadem. Persecuted Christians terribly.


D 42. Constantine and Galerius. 305-306.

at York

43. 4 Augusti. 306-323.

| | |
|-------------|-----------|
| Constantine | Maximian |
| Galerius | Maxentius |
| Maximian | Valens |



D. 44. Constantine the great. 323-337. Became a Christian. Son of Constantine.
mounted  the Labarum.

330 he founded Constantinople in the site of Byzantium.

Sl. 45-7. 3 sons of Constantine.

Sl. 48. Julian. son of a brother of Constantine. The Apostate. a heathen.

D. 49. Jovianus. Capt. of domestic guards. 363 A.D. 364.

D. 50. Valentinian & Valens. ^{Capt.} Domestic guards - brothers A.D. 364 - 375

[51-3] ~~M.~~ Valens. ~~M.~~ Gratian & Valentinian II sons of Valentinian. A.D. 375 - 379.

D. 54. Theodorus the great. Agriculturist. a soldier. assassinated. 379 - 375.

The last of the Emperors who ruled over the whole Empire.

After this it was divided into 2. The Eastern & Byzantine & the Western & Roman.
went on for 1000 years. Got overruled by barbarians.

D. 1. Arcadius. son of Theodorus. Emp. of East.

2. Theodorus II. son.

D. Honorius.
1. ~~Theodorus~~ son of Theodorus
423. Emp. of West.

lost nearly all.

M. 2. Valentinian III. AD 460 - 476.

Maximus. Avitus. Majorian - all
S Severus. Anthemius. Olybrius - ^{all} over
Glycerius. Nepos. Orestes. (astraw.)

Romulus Augustulus. 476.